

THE IRON AGE

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THE IRON AGE

New York, Thursday, May 7, 1908.

THE IRON INDUSTRY OF CHINA.

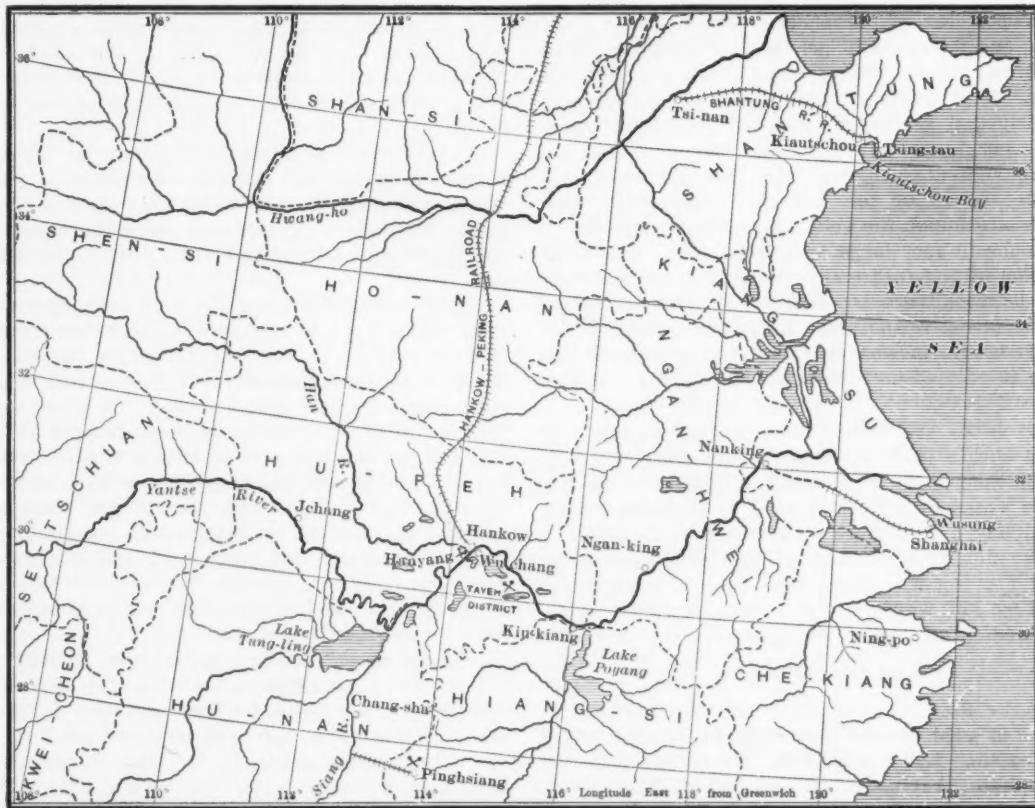
Description of the Hanyang Iron & Steel Works.

Our importations of pig iron from China have attracted the attention of the trade to the industry of that country, and therefore much interest attaches to reliable data published in *Stahl und Eisen* by C. Blaue of Dusseldorf-Obercassel, Germany, formerly chief engineer of the Hanyang Iron & Steel Works, the only plant of any consequence in China. It is located at the confluence of the Han and Yangtse rivers, close to Hankow, the largest and most promising commercial town on the great inland waterway of the East, the distance from the sea

Early Operations Unsatisfactory.

The blast furnace plant has been running since 1894, with interruptions, and in the earlier years only one furnace was usually in blast. By enlarging the hot blast stove equipment and making other improvements, the daily production was increased to 70 to 100 tons per day according to the grade of iron made. The puddle mill ran only for a short time and was stopped on account of the large consumption of fuel.

Toward the end of the '90s the Bessemer plant made



Map of China, Showing the Location of Its Iron Industry.

being 750 miles. The accompanying map shows the location.

The enterprise was started in 1891, when English engineers put in the plant purchased chiefly in England by Chang-Chi-tung, then recently made governor of the province of Hu-Peh. It consisted of two 50-ton blast furnaces with two Cowper stoves each; 20 puddling furnaces with two hammers and a muck mill; two 5-ton Bessemer converters; one 12-ton basic open hearth furnace; a 30-in. combination blooming and rail reversing mill with three stands; a 13 1/4-in. three-high bar mill and a two-high plate mill, the two latter driven by a common engine. There were also a foundry, a forge with a structural shop, a machine shop, a bolt and nut factory and a plant for manufacturing fire brick.

The works took five to six years to build, the erection being in charge of engineers and foremen from a large Belgian company which at that time had business relations with the Hanyang Iron & Steel Works. About 80 Chinese were first trained for a year at the Belgian works.

steel, from cupola metal, for the rails for the Hankow-Peking Railroad, which was built from 1900 to 1905 with rails chiefly made at the Hanyang Iron & Steel Works. Incidentally, both the Bessemer plant and the open hearth furnace, which latter worked with 30 per cent. of pig iron, produced steel for the bar and plate mills. The total output of rolled products at that time is not supposed to have exceeded 15,000 to 20,000 tons per annum, and during the greater part of that time was below these figures.

The layout of the plant and the use of poor coke and coal did not permit of making a profit, in spite of high prices, and the enterprise suffered at times from lack of funds. It was on such an occasion, prior to 1900, that a contract was made with the Japanese works at Wakamatsu, against the advice of the engineers, to deliver, for 30 years, 100,000 tons per annum of the best low phosphorus magnetites at the price of about \$1.50 per ton, f.o.b. loading station. This contract imperiled the future of the Bessemer plant, because a part of the other easily reached ores contained too much phosphorus—from 0.1

to 0.25 per cent.—in order to produce pig iron in adequate quantities for the acid Bessemer converters. The fact must also be taken into account that a large part of the coke contains small quantities of phosphorus.

In 1904 the greatest interest in the works came into the possession of Sheng-Kung-pao, the leading member of the syndicate which had acquired the company in 1896 from Chang-Chi-tung. In order to adapt the plant to working all the magnetites and specular ores of the Tajeh District, it was decided to raise money to put up an open hearth plant and a large modern rolling mill. It was the plan to increase the number of blast furnaces and open hearth furnaces to keep pace with the demand, provided the enterprise proved profitable. The managers appointed by Sheng-Kung-pao visited the United States, England and Germany, in order to purchase the new equipment.

The Iron Ores.

Before describing the new works, some reference may be made to the supply of raw materials. The iron ores of the Tajeh District, which is located about 60 miles southeast of Hankow on the right bank of the Yangtse River, are red hematite and magnetic which carry from 58 to 68 per cent. of iron, 3 to 7 per cent. of silica, 1 to 2 per cent. of alumina, 0.2 to 0.4 per cent. of manganese, 0.04 to 0.25 per cent. of phosphorus, 0.05 to 0.1 per cent. of sulphur and 0.05 to 0.25 per cent. of copper. There are also brown iron ores carrying 6 to 9 per cent. of manganese. It is estimated that there are available of the two principal grades of ore over 100,000,000 tons. The ores occur in an uninterrupted ridge of about 7.5 miles. The vein dips sharply and averages about 235 ft. On the section of the deposit where lower phosphorus ores are found, the vein is in contact with almost pure limestone in very large quantities. This locality is certainly one of the future centers of the iron industry of China, because there is coupled with the wealth of ore and of limestone the existence of coal suitable for cooking. It occurs in workable quantity, at a moderate depth, and is only distant 20 to 25 miles from the iron ore.

The ore mines are connected by a 15-mile standard gauge road with a loading station on the Yangtse River. The ore and limestone are conveyed from the loading station to the works by lighters hauled by tugboats owned by the company, the distance being about 75 miles. The ore for the Japanese market is shipped directly in steamers. The loading and unloading are done by coolies, whose low wages, about 7 cents per shift, make elaborate loading appliances unnecessary.

Coal and Coke.

During the first years of their existence the works used a coke of good quality from Kaiping, located northeast of Tientsin. Later, coke from the owned collieries at Man-gan-hsan, province of Hupeh, and at Peng-hsiang, province of Kiang-si, was employed. Incidentally, there was also used the so-called native coke made by Chinese methods—usually a bad material high in ash—which was delivered from the province of Hunan. Now the collieries at Ping-hsiang having been equipped with coal washers, and having opened good seams, have reached the point that a firm coke is made with an average of 12 to 15 per cent. of ash and 0.8 per cent. of sulphur. The production is large enough to operate the Hanyang furnaces exclusively with this coke. Ping-hsiang lies in the western part of the province of Kiang-si, close to the border of the province of Hunan. Coke and coal are carried over a standard gauge road about 60 miles long to the Siang River, where it is loaded by coolies on lighters which are towed down the river through Lake Tung-ting to the Yangtse River and to the works. A great drawback is the cost of the haul from the mines to the works. Since the route is over 250 miles long it occupies much time and the price of the coke is increased by the duties to be paid on the coke for its passage through the province of Hunan. The Ping-hsiang coals are not as suitable for gas making as the Japanese coals, so that the latter are preferred unless the price is not much higher than that of their own coals.

The cost of the raw materials, which was formerly

considerably higher, is about 75 cents per gross ton for ore, 50 cents for limestone, \$6.25 to \$7.50 for coke and \$4.50 for coal, all delivered at the furnaces. It is assumed that these prices will be lowered considerably in the near future, owing to the increased consumption.

The New Plant.

In undertaking to rebuild and enlarge the plant the question was given consideration of moving the works or of erecting the new parts at the iron deposits, but serious reasons overruled the plan. The first step was to develop an open hearth plant suitable for working up the pig iron, and next to enlarge and modernize the rolling mill. With this object there were purchased in Germany and in England, from 1904 to 1906, three 30-ton open hearth furnaces, a gas heated 150-ton mixer, a gas producer plant, two traveling casting cranes of 50-ton and 35-ton capacity, 20 and 15 ton auxiliary cranes, a stripping plant, iron ladle cars, casting ladles, ingot cars, locomotives, &c. There were also purchased three large reversing mills with electrically driven tables and rolls, one being a 43-in. blooming mill, one a plate mill with two stands for 98-in. plates and the third a 33.5 in. beam and rail mill with three stands. The equipment included gas heated pit furnaces, a steam hydraulic bloom shear, an electrically driven billet and slab shear, a large electrically driven plate shear, edge milling machines, roll lathes, three electrically driven traveling cranes, two charging cranes, a boiler plant of 10 two-flue boilers and five water tube boilers, a dynamo plant for operating cranes, &c.

For the new buildings the structural material was purchased in standard lengths and the greater part of the rivets was bought. The shop work was done at Hanyang. The steel shop was new while the old puddle mill and rolling mill buildings were used, with some additions.

Later, toward the beginning of 1907, there were ordered in Germany a third 300-ton blast furnace with four Cowper stoves, 12 two-flue boilers, a 600-kw. electric plant, a Parsons turbo-blower, &c. A fourth and fifth open hearth furnace and a second mixer are to be built and there is to be a fourth blast furnace of 300 tons capacity, on the foundations of which work has already begun. During the building of the new plant the old blooming and rail mill and the bar mill were again put in order and the old Bessemer plant and the puddle mill with its hammers and muck mill and the intermediate plate mill were torn out. A new bar mill took the place of the latter. The two old blast furnaces were equipped with a gas cleaning plant.

The status of the plant at the close of 1907 was that the two old blast furnaces were making basic and foundry pig iron and the old 12-ton open hearth furnace, the old rolling mill, the new bar mill and the mill for flats and a part of the electric plant were in operation. The new steel works and the new rolling mills were being started and it was expected that the third blast furnace would be soon in operation.

Chinese Labor.

All the labor in construction and operation connected with masonry, erection, riveting, with the blast furnaces, open hearth furnaces, rolling mills, &c., was done by Chinese exclusively without the aid of foreign erectors or foremen. They worked under the direction of the European engineers; these directions, it is true, being more detailed than is usual elsewhere. The Chinese are not careful on contract work and often waste a good deal of time. While the wages of the coolies are 6 to 8 cents per shift, the wages of the more skilled workmen who are paid by the month are considerably higher. According to age and ability, the following wages are paid for about 25 to 28 shifts of 10 hr. each, per month: Pattern-makers, \$5 to \$17.50; molders, \$4 to \$25; locksmiths and lathe hands, \$5 to \$17.50; roll turners, \$10 to \$22.50; erectors, \$10 to \$25, and machinists, \$3.75 to \$20. Foremen and head men at furnaces, rolling mills, shops, &c., are paid varying sums, their salaries ranging between \$10 and \$47.50 per month.

The Future.

Blauel states that it is difficult, in view of the inability to calculate the bearing of the questions involved,

to express a correct opinion as to the future of the Hanyang Iron & Steel Works. The prospects of success are now better than ever because the plant is more suitable and far better, because the working population has been trained to some extent, and chiefly because the question of the supply of raw materials has been settled. The production of steel and of rolling mill products may reach 40,000 to 50,000 tons this year unless unexpected difficulties intervene. In 1909 or 1910 it may rise to 100,000 tons per annum. It may be assumed that a profitable development of the works will have a favorable effect upon the entire iron industry of China, provided there be at the head of the new operations men of the type of the present general manager, V. K. Lee. The technical management of the plant has since the beginning been in the hands of European engineers, Englishmen, Belgians, Germans and Frenchmen alternating. Generally, however, like the present time, the staff is international.

Climate Conditions.

The long tropical summer of the middle Yangtse Valley renders residence acceptable to only few Europeans. At this season the temperature, corresponding to the continental location of Hankow, ranges for weeks, day and night, above 86 degrees, F., even up to 100 degrees. In July and August it becomes too hot even for the Chinese, so that hitherto work at the steel plant and rolling mills has been suspended for some weeks. With the better arrangements and the new higher buildings these disturbing stoppages may cease.

The product of the blast furnaces, which in the years 1905 to 1907 consisted chiefly of foundry iron, steel making iron and high grade spiegeleisen, was used at the works themselves, in Japan, in the Chinese ports and in the United States. Shipments are made by steamer directly from the dock of the works.

The Yangtse River, with its enormous traffic, is navigable for the largest ocean steamers up to Hankow from April to October, while in winter the stage of the water permits the movement of vessels drawing 10 to 13 ft. The difference in level between high and low water is at Hankow 37 to 50 ft. every year. Thirty-five river steamers of 1000 to 3000 tons take care of the traffic between Shanghai and Hankow and the intermediate larger ports. Above Hankow navigation is not so favorable. At high water small ocean steamers run up to Ichang, 375 miles up stream. At other times there are only shallow draft river steamers of 300 to 600 tons which ply on the river, including a branch line from Hankow to Chang-sha on the Siang River. The Ping-hsiang collieries are 75 miles distant from the latter point. Above Ichang the rapids of the Yangtse prevent further navigation, except for junks, which are drawn over them by hundreds of coolies. Further up, the river is navigable for hundreds of miles.

Mineral Wealth of the District.

While the territory of the middle and upper Yangtse River has been little explored as to its mineral wealth, it may be assumed from the finds made that besides rich gold, copper, silver, lead and antimony deposits, there are coal and iron on a large scale. Rich iron ore has been opened in the provinces of Kweichou and Kiangsu; brown ore carrying about 20 per cent. of manganese has been found in large quantity on Lake Poy and about 150 miles below Hankow, and ore containing 45 per cent. of manganese exists in the vicinity of Ping-hsiang. When account is taken, outside of the Yangtse District, of the rich iron ore deposits of Shan tung, Hunan, Kuang tung and Kuangsi, and of the extremely rich beds of Tongking, then it is realized that the iron ore resources of China are not much inferior to those of the United States. While coking coals are not equal in quality or in quantity to those of the latter country named, they are abundant enough to hold out the promise of a brilliant development of the iron industry, under normal conditions, for the distant future.

Conditions are most favorable for the development of the iron industry of China in the Yangtse District, on account of its water transportation. Besides the Hanyang Iron & Steel Works, the government arsenals at Shanghai, Hanyang, Fouchow and Tientsin have built steel works with open hearth and crucible furnaces which

were bought in England, France and Germany. Aside from the fact that the building of the works took an extraordinary amount of time, the operations were stopped after a longer or shorter period because it was found that the profit and loss account was most favorable when they were idle.

Early in the '90s an effort was made to start an iron plant in the province of Kweichou. A small blast furnace, purchased in England with its equipment, was to be started by Chinese who had studied blast furnace practice for a few months at an English plant. They believed that they could do it without the aid of foreign engineers, and therefore were much disappointed when the furnace froze on them while blowing in. Since that time the furnace has stood, filled with its charges, deserted, as a striking monument to the Chinese dislike of foreigners and their science.

The Ore Docks of the Great Lakes.

The Duluth & Iron Range Railroad Company has issued its annual statement of ore dock changes, covering the year ending with May 1. This shows three important changes in the past year. The chief of these is the addition of No. 6 dock at Two Harbors, which, though not put into totals in the statement, might as well have been. It adds 37,360 tons to the storage capacity of Two Harbors, and gives that port an annual shipping capacity of nearly 10,000,000 tons. The second is the addition of capacity by the Chicago & Northwestern at Ashland, by the reconstruction of its No. 2 dock there, an increase of 16,380 tons storage, and a far greater relative increase in capacity, for the new dock is of modern lines and height while the former was too low to handle ore to the modern freighters. The third is the reduction of the Duluth, South Shore & Atlantic's capacity at Marquette by the razing of its No. 1 dock, reducing its theoretical capacity by 27,000 tons. But this reduction is merely apparent and is not real, for the dock was long since relegated to oblivion on account of its dimensions being much too small for modern shipping. It is doubtful if a single ore ship that will ply the lakes this year could have loaded there, except at great cost of time and trouble.

There are now on the lakes 24 ore shipping piers, containing more than 6000 pockets, of an average storage capacity for 214 tons, some as high as 350, and others, of oldest design, of about 150. The total storage capacity of the 24 piers is 1,327,000 gross tons, and their annual shipping capacity, given fair dispatch and plenty of cars and ships, not far from 50,000,000 tons, to be covered in the lake season of about eight months. The investment in these piers cannot be much less than \$15,000,000.

The various railroad systems show dock capacities, in gross tons, as follows: Chicago & Northwestern, at Escanaba, 188,383, at Ashland, 84,240; Great Northern at Allouez bay, near Duluth, 283,500; Duluth, Missabe & Northern, at Duluth, 269,034; Duluth & Iron Range at Twin Harbors, near Duluth, 225,770; Chicago, Milwaukee & St. Paul, at Escanaba, 113,900; Duluth, South Shore & Atlantic, at Marquette, 78,000; Wisconsin Central, at Ashland, 48,356; Lake Superior & Ishpeming, at Marquette, 36,000; Algoma Central, at Michipicoten, no storage, but 12 shipping pockets.

The Pittsburgh Construction Company, Diamond Bank Building, Pittsburgh, is completing the erection of a highway Scherzer rolling lift bridge over Swan Creek, Toledo, Ohio, for the Lake Shore & Michigan Southern Railroad. It will have an 83-ft. span and 30-ft. roadway, with sidewalks, and 200 tons of structural steel were used. The bridge was fabricated in the plant of the King Bridge Company, Cleveland. This is the first bridge of its type to be erected in Toledo. The Pittsburgh Construction Company also lately completed a double track 102-ft. span plate girder type of 150 tons to replace an old 100-ft. through pin connected span, for the Baltimore & Ohio Railroad at Darby, near Philadelphia. The company also recently received a contract for the erection of a 150-ft. double track riveted truss bridge for the Baltimore & Ohio Railroad at Chester, Pa., to replace an old span of similar construction.

The Queen City Shaper Gear Box.

Borrowing, in a measure, from automobile practice in change gear devices, the Queen City Machine Tool Company, Cincinnati, Ohio, has developed an improved gear box for shapers. Figs. 1 and 2 show it applied to a 20-in. back geared crank shaper. In its design and construction it has been the aim to avoid the faults common to many devices of the sort which have been tried on machine tools, such as weak or complicated parts likely to get out of order, or a mechanism subject to shocks and jars, shortening not only its own life, but that of the whole machine.

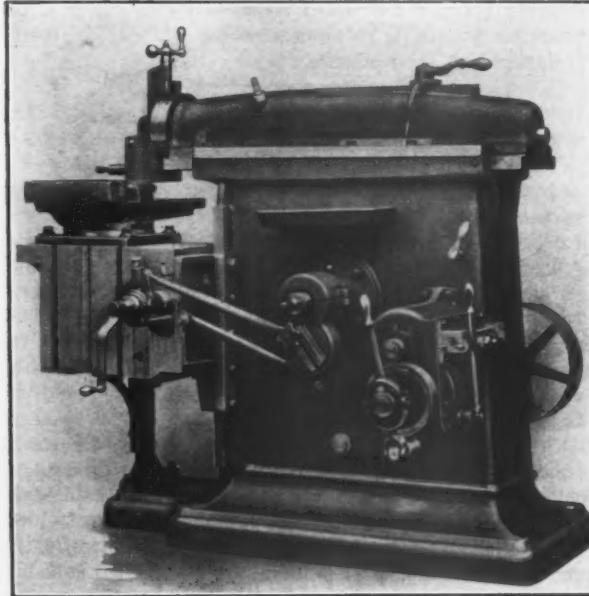


Fig. 1.—A 20-In. Back Geared Crank Shaper Built by the Queen City Machine Tool Company, Cincinnati, Ohio, and Equipped with the Improved Gear Box.

The advantage of a satisfactory form of change gear device is acknowledged; it allows a single pulley drive using a wide belt that it might be impracticable to shaft, or a constant speed motor, and it renders the changing of speeds so easy that it is not likely to be neglected when

Fig. 3, gives a sectional view from the front of the shaper, and Fig. 4 end and rear elevations and a plan of the lever latching devices. The driving pulley in Fig. 3 is mounted on the gear box shaft, which extends through the shaper, and at its opposite end carries the expanding member of a friction clutch operated through a sliding cone by the lever at the right. The other member of the clutch is integral with a sleeve on the gear box shaft, which has keyed to it four gears, *a*, *b*, *c* and *d*. Almost vertically over this shaft is an intermediate shaft carrying three sliding sets of two gears each. *e f*, *g h* and *i j*. By means of the gear shifting lever of Fig. 4 gears *e* and *f* may be alternately engaged with gears *a* and *b* or

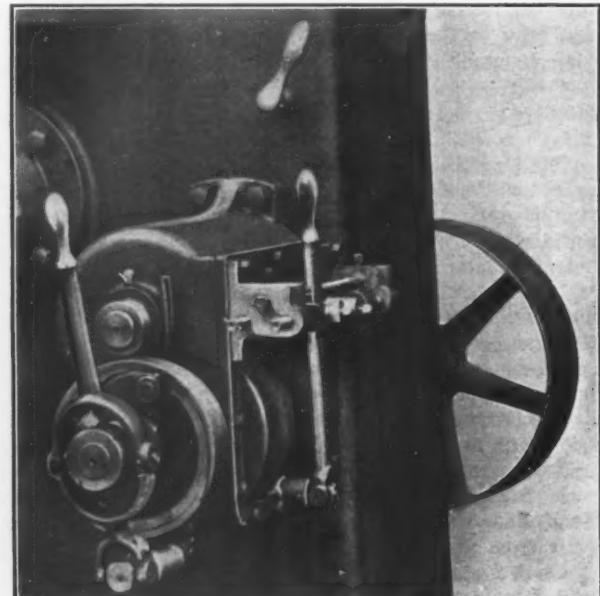


Fig. 2.—Detail of the New Queen City Shaper Gear Box.

gears *g* and *h* with gears *c* and *d*. The latch mechanism shown in Fig. 4 permits only one of these two sets of gears to be engaged at a time. The shifting fork of gears, *e* and *f*, is attached to the sliding rod *k*, and that of gears, *g* and *h*, to the sliding rod *l*. Between the sliding rods are two fixed stop rods which prevent the gear shifting

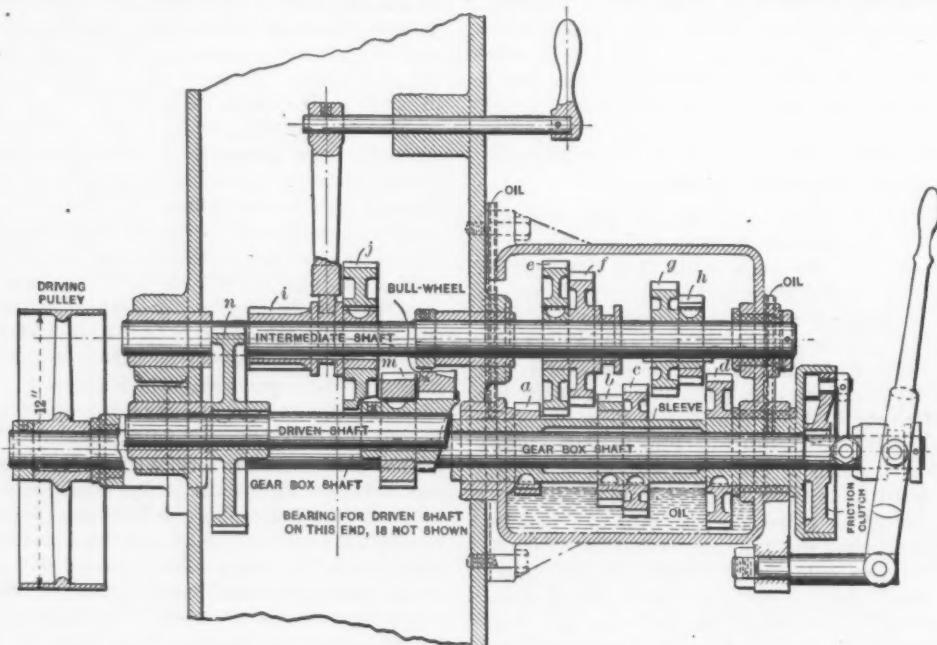


Fig. 3.—Sectional View of the Gear Box from the Front of the Shaper.

the work requires it. The similarity in principle of this new gear box and those used on automobiles is apparent from the accompanying drawings, Figs. 3 and 4, but its construction is considerably modified and its particular application is entirely new.

The operation will be understood from the drawings,

lever from being transferred from engagement with one set of shifting forks to the other, except when each set is in its neutral position, so that none of the gears *g*, *h*, *e* and *f* are in mesh.

The gear shifting lever will be seen to have two motions lateral and in and out. When thrown toward the

gear box it comes between the shifting forks of the gears *g* and *h* and a stop on the sliding rod *l*. If now the lever is thrown to the left, as seen in Fig. 4, the gear *h* engages with the gear *d* of Fig. 3, and if thrown to the right the gear *g* is engaged with the gear *c*. To shift the gear set *e* the lever is moved outward or away from the gear box, passing between the fixed rods, until the stops on the sliding rod *k* are engaged, when shifting to the right engages the gear *e* with the gear *a* and shifting to the left the gear *f* with the gear *b*. None of these changes are made with the friction clutch engaged and the driving shaft running. Before a change is made the friction clutch is disengaged, so that the gears on the sleeve *a*, *b*, *c* and *d* are stationary until the change has been made; then the friction clutch is re-engaged to start the drive.

The four changes, which it will thus be seen are made through the gear box are doubled by the back gears *i* and *j* on the intermediate shaft, which are operated by the sliding rod and shifter above them, as in the company's standard machine. These changes are also made while the gear box shaft is disengaged through the friction clutch. The gear *f* may be engaged with the gear *m* on the driven shaft, giving one series of four speeds through the other changes in the gear box, or the gear *i* may be engaged with the gear *n*, also keyed to the driven shaft, to give a second series. The driven shaft carries a pinion which meshes the bull wheel of the shaper.

In the drawings the clutch and all the gears are shown disengaged, and it will be noticed that the length inside of the box is only equal to the sum of the gear faces; the floor space required does not exceed that of the cone drive. The expanding clutch and all gears are automatically and independently locked in their different working and idle positions by spring actuated plungers entering sockets. When it is desired to shift the gears for a new speed, after throwing out the clutch the driving shaft alone is running and the sleeve continues to creep slowly around without force, facilitating the meshing of the desired gears. Since in all cases of speed changing the load is off, no shock occurs, although the power when the drive is engaged is much greater than with a cone pulley drive. When using a constant speed motor the changes can be made without stopping it. When the shaper pulley is belted direct to a line shaft so as to run at 315 rev. per min. the following cutting strokes per minute are obtained: 7.2, 10.96, 15.4, 23.5, 34.8, 53.1, 74.7 and 114. An index plate shows how to obtain the proper speeds.

The gear box proper is a pressed fit in the column, besides being firmly bolted to it. All parts are easily accessible for inspection without taking the box from the column. The gear box can be fitted to all sizes of shapers and no special column is required. The provision for lubricating the gears in the gear box and various shafts is indicated in Fig. 3. There is an oil reservoir in the bottom of the gear box, into which the gears *a*, *b*, *c* and *d* dip and carry lubricant up to the other gears with which they mesh. The sleeve of the gear box shaft and other journals are lubricated through the oil tubes as indicated.

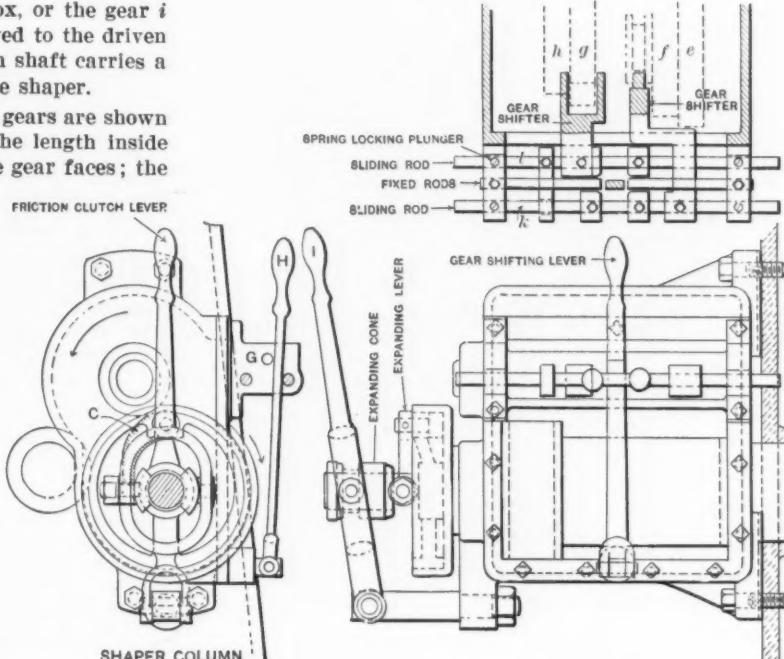


Fig. 4.—End and Rear Elevations of the Gear Box and Plan of the Lever Latching Devices.

San Francisco and Oakland; the United Metal Trades Association of Oregon, Washington and British Columbia; the Employers' and Founders' Association of Los Angeles, and the Pacific Foundrymen's Association of Seattle, Wash. Among the prominent firms in the organizations that have joined the league are: The Union Iron Works, Rishon Iron Works, Vulcan Iron Works, United Engineering Works and 80 other iron and steel firms in San Francisco and vicinity; the Willamette Iron and Steel Works, Phoenix Iron Works, Smith Bros. & Watson, Pacific Iron Works, Oregon Brass Works and Columbia Steel Company of Portland; Moran Bros. Company, Vulcan Iron Works, Eagle Iron Works, Heffernan Engine Works and Puget Sound Iron & Steel Works of Seattle and Tacoma; Sumner Iron Works of Everett, Wash., and Letson & Burge of Bellingham, Wash.

The purpose of the great organization of metal manufacturers described above is to strengthen and more completely unify the iron and steel interests of the Coast, as well as to bring about the satisfactory adjustment and settlement of such labor disputes as may arise. The attitude of the league toward labor interests, however, will be cordial. It is recognized that cases will arise where a method of settling labor demands in one section would not apply in another manufacturing center. In such an event league members are to meet and discuss the points at issue with representatives of the labor unions in an endeavor to bring about an amicable agreement.

The Pacific Metal Trades League Organized.

On April 25 the Pacific Metal Trades League was organized in Portland, Ore., at a convention of representatives from four large metal associations of the Pacific Coast. It amounts to a huge federation of manufacturers in the iron and steel industries covering California, Oregon, Washington and British Columbia. On April 28 the Executive Committee of the California Metal Trades Association of San Francisco voted to become a member of the new organization. The league is the strongest

The Effect on Coal of Water and Fine Crushing.

BY H. M. CHAPMAN AND EDWIN BARNHART, SPARROWS POINT, MD.

In the past two years many tests have been made with finely ground coal in by-product coke ovens. These have demonstrated that finely ground or pulverized coal will give the strongest and most homogeneous coke. The result has been to cause a great demand for fine coal 90 to 95 per cent., of which would pass through a screen with $\frac{1}{4}$ -in. meshes. The effect of water on this fine coal has apparently not been recognized.

The writers have made a large number of tests at the plant of the Maryland Steel Company, Sparrows Point, Md., which prove conclusively that a cubic foot of wet coal up to 7 per cent. of water weighs less than a cubic foot of dry coal, and that the finer the coal the greater is the decrease in weight, the percentage of water remaining the same. Tables 1, 2, 3 and 4 give in detail the variations in weight due to fine crushing and an increased per-

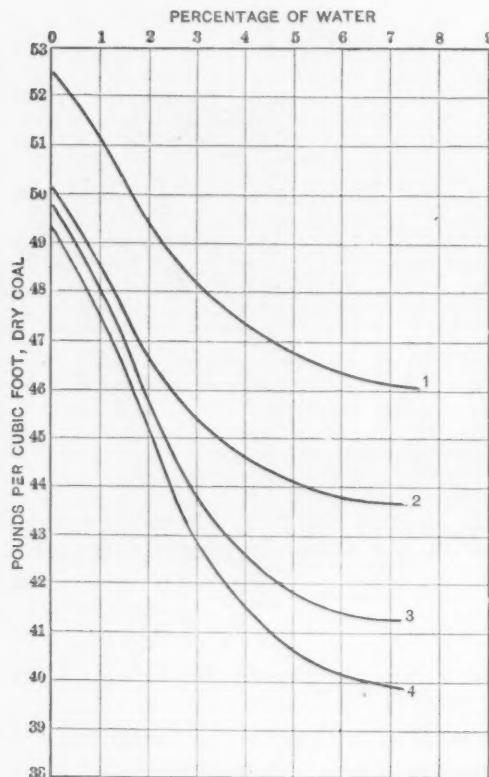


Diagram Showing Weight of Wet Coal Compared with that of an Equal Bulk of Dry Coal.

centage of water. The same mixture of coals was used in all the tests, and was made up as follows: Forty per cent. of a good gas coal averaging 33 per cent. volatile matter and 60 per cent. of a coal averaging 26 per cent. volatile matter. The analysis of the mixed coal was as follows:

	Per cent.
Volatile matter	28.8
Fixed carbon	61.7
Ash	9.50

The Method of Making Tests.

All the tests were conducted exactly alike. The coal was first dried thoroughly at 210 degrees F. It was then allowed to run from a fixed height into a copper cylinder, the capacity of which was exactly 0.4 cu. ft. Particular care was exercised in filling the cylinder, so as to prevent any error due to irregular packing of the coal, and also to obtain as nearly as possible the conditions under which an oven is charged. The cylinder was filled level full, and then both cylinder and coal were weighed (the weight of the empty cylinder being deducted). One per cent. of water by weight was then added, intimately mixed and the coal then allowed to stand until the water

had thoroughly penetrated it. The coal was then run into the copper cylinder until level full. A similar procedure was followed with the subsequent additions. Data as to the fineness of the coal and the weight as affected by additions of water are given below:

Table 1.

	Per cent.
Through 1-mesh screen	100.00
Through 4-mesh screen	48.15
Through 8-mesh screen	27.05
Through 10-mesh screen	21.85
Through 20-mesh screen	12.00
Through 40-mesh screen	6.95
Through 60-mesh screen	5.10
Through 100-mesh screen	3.30

Amount of water added.	Weight of coal and water, pounds per cubic foot.	Lb. of dry coal in a cubic foot of coal and water.
None	52.45	52.45
1 per cent.	51.69	51.17
2 per cent.	50.35	49.34
3 per cent.	49.60	48.11
4 per cent.	49.30	47.33
5 per cent.	49.16	46.70
6 per cent.	49.16	46.21
7 per cent.	49.52	46.05

Table 2.

	Per cent.
Through 4-mesh screen	65.35
Through 8-mesh screen	42.15
Through 10-mesh screen	35.87
Through 20-mesh screen	21.97
Through 40-mesh screen	13.10
Through 60-mesh screen	9.85
Through 100-mesh screen	5.85

Amount of water added.	Weight of coal and water, pounds per cubic foot.	Lb. of dry coal in a cubic foot of coal and water.
None	50.09	50.09
1 per cent.	49.02	48.53
2 per cent.	47.59	46.62
3 per cent.	46.72	45.32
4 per cent.	46.43	44.57
5 per cent.	46.39	44.07
6 per cent.	46.55	43.76
7 per cent.	47.01	43.72

Table 3.

	Per cent.
Through 4-mesh screen	93.30
Through 8-mesh screen	69.50
Through 10-mesh screen	60.40
Through 20-mesh screen	38.95
Through 40-mesh screen	23.35
Through 60-mesh screen	17.10
Through 100-mesh screen	8.00

Amount of water added.	Weight of coal and water, pounds per cubic foot.	Lb. of dry coal in a cubic foot of coal and water.
None	49.73	49.73
1 per cent.	48.64	48.15
2 per cent.	46.67	45.74
3 per cent.	45.23	43.87
4 per cent.	44.31	42.54
5 per cent.	44.07	41.87
6 per cent.	44.01	41.37
7 per cent.	44.36	41.25

Table 4.

	Per cent.
Through 4-mesh screen	100.00
Through 8-mesh screen	75.80
Through 10-mesh screen	65.20
Through 20-mesh screen	39.60
Through 40-mesh screen	23.00
Through 60-mesh screen	15.80
Through 100-mesh screen	8.00

Amount of water added.	Weight of coal and water, pounds per cubic foot.	Lb. of dry coal in a cubic foot of coal and water.
None	49.18	49.18
1 per cent.	47.80	47.32
2 per cent.	46.04	45.12
3 per cent.	44.06	42.73
4 per cent.	43.30	41.65
5 per cent.	42.83	40.69
6 per cent.	42.77	40.20
7 per cent.	42.96	39.96

Test 1 was started with coarse coal, about 52 per cent. of which was above $\frac{1}{4}$ in. in size. With the addition of water there was a decrease in weight of a cubic foot until 6 per cent. had been added. Further addition of water

had no appreciable effect on the weight of coal per cubic foot.

The coal after being used in test 1 was thoroughly dried, and then crushed for test 2, so that about 35 per cent. was above $\frac{1}{4}$ in. in size. The weight of a cubic foot of this coal when dry was 2.36 lb. less than the weight of the dry coal in test 1. This was due to the coal being crushed finer. With the addition of water the decrease in weight of a cubic foot was in very nearly the same ratio as in test 1.

For test 3 the coal was crushed so that about 7 per cent. remained above $\frac{1}{4}$ in. in size. With the addition of water the decrease in weight of a cubic foot was much more rapid than in tests 1 and 2.

The coal used in test 4 was all below $\frac{1}{4}$ in. in size. The weight of the dry coal was 0.55 lb. less than the weight of the dry coal in test 3.

Lessened Weight of Wet and Fine Coal.

Plotting these values, figured on dry coal, we get the curves 1, 2, 3 and 4 shown in the diagram, corresponding to tests 1, 2, 3 and 4, respectively. As will be seen from the foregoing data, the addition of water to the coal and the fine crushing had a like effect—an increase in the volume. When the coal and 7 per cent. of water were placed in the cylinder and the final weight was taken, the cylinder contained nearly 24 per cent. less of dry coal than the original weight taken. This surplus of 24 per cent. could not be put into the cylinder, even by jarring it down. It was necessary to stamp the coal in order to get it all in again.

The decreased weight due to finer crushing is fully explained by the increased voids, which are the direct result of crushing. The decrease caused by the addition of water is the result of adhesion of the water to the fine particles of coal, which prevents the finer pieces from filling up the voids between the larger ones. The similarity of the curves in the diagram is very marked. They all show a sharp decline until 4 per cent. of water has been added. From there to 6 per cent. the decline is moderate, and beyond 6 per cent. the curve is practically a straight line.

Since August 1, 1907, the average oven charge per day has been determined as follows: A sample was taken of the coal charged on both day and night turns. The percentage of water and the weight of a cubic foot of the wet coal was then determined. From the latter the weight of water present was deducted, and this value multiplied by the cubical capacity of the oven gave the weight of coal charged into each oven. An average of 1000 tons of coal per day was used. Part was unloaded from cars and part brought in from stock. Altogether 15,000 tons was taken from stock. When the pile was cleaned up the difference between the amount put in and the amount taken out (figured according to the weight of a cubic foot, as explained above), was only 100 tons, or 0.7 per cent.

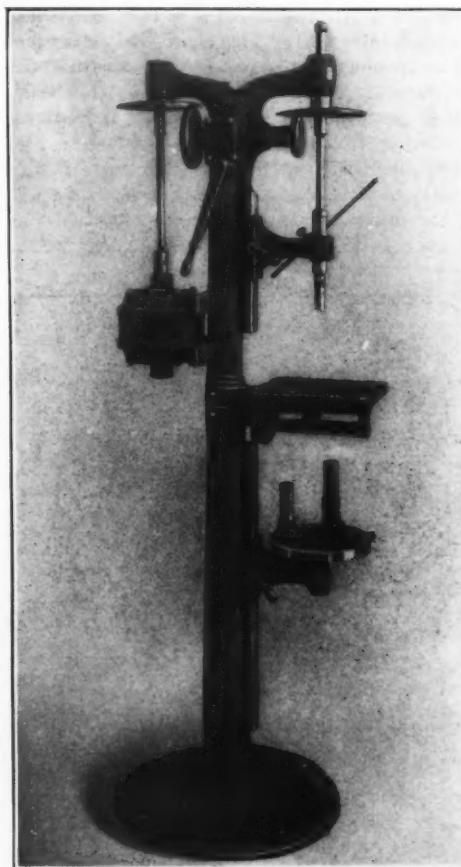
In actual practice the variation in the percentage of water in the coal from day to day is entirely due to atmospheric conditions, and is much higher during the winter months than in summer. The amount of water ranges from 2.25 per cent. to 6.05 per cent. With coarse dry coal the oven charge has been as high as 19,500 lb., while with wet, fine coal, it has been down to 15,400 lb., a difference of 4100 lb., or 21 per cent. With fine coal the average oven charge was 17,000 lb., or nearly 13 per cent. less than is possible with coarse coal. The value of 13 per cent. more product, namely, coke, ammonia, gas and tar, must certainly be considered.

It is a question if the superior quality of the coke obtained from finely crushed coal counterbalances the increased cost of manufacture due to running a plant under capacity.

The Iron City Steel Company, which has moved into more commodious quarters at 717, 718 and 719 Bessemer Building, Pittsburgh, has taken the exclusive agency in the Pittsburgh District of the Interstate Iron & Steel Company, Cambridge, Ohio, and will handle all the products of that mill. C. H. Daker will be in charge of the selling.

The W. P. I. Motor Driven Drill.

The new sensitive drill recently brought out by the Washburn shops of the Worcester Polytechnic Institute, Worcester, Mass., which was described in *The Iron Age* April 2, 1908, is shown in its motor driven form in the illustration. The motor is bolted to the rear of the column, just high enough to clear the square table when this is swung aside for the use of the round table, crotch or cup centers, and be above the reach of chips brushed from the table. A constant speed alternating current motor is used, the speed variations of the machine being



A New Type of Motor-Driven Sensitive Drill Built by the Washburn Shops of the Worcester Polytechnic Institute.

mechanical. The motor runs at 1200 rev. per min., which gives a variation of from 400 to 1600 revolutions of the spindle through the medium of the double disk friction. The spindle is stopped without stopping the motor by throwing the speed lever to its extreme or neutral position when the driver disk is out of contact with its roll, the latter resting opposite a recess in the disk. Consequently the motor is started without a load. When the roll is thrown into contact with its disk little power is required to run the machine, as the normal pressure on the roll is slight until the drill is in use, when the pressure increases or decreases with the demand made upon the tool. The induction motors regularly furnished are wound for 110 and 220 volts, two or three phase, 25, 40 and 60 cycles.

Of the 57 miles of Paris underground railroads authorized, 32 miles are in operation and work is in progress on the remainder. At present the travel averages 350,000 passengers a day. There are two tracks parallel to the Seine and serving the traffic of the central portions of the city, a circular line surrounding the city and situated between the central quarters and the fortifications, occupying somewhat the position of the outer boulevards, and lastly, two transverse lines at right angles to the course of the river. The system has a double track tunnel throughout, except where it crosses under the Seine, through two iron lined tubes, each 16.4 ft. inside diameter. These subaqueous tunnels are being excavated under pressure by the shield method.

A Bridgeford Motor Driven Geared Head Lathe.

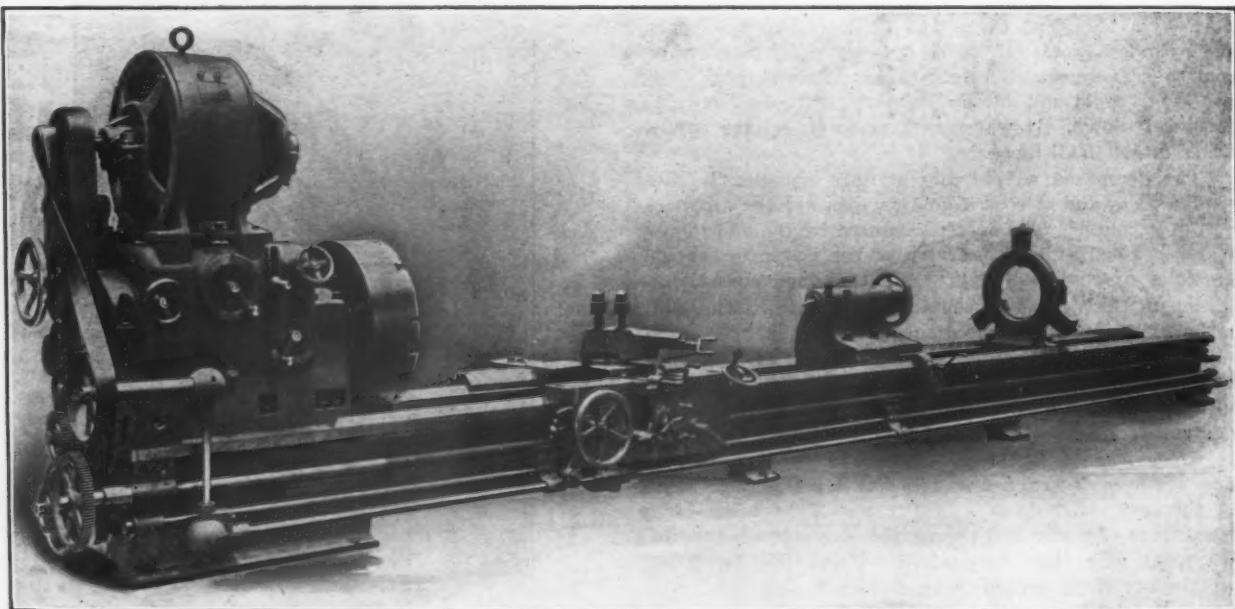
One of three lathes recently built for the new shops of the Jones & Laughlin Steel Company, at Woodlawn, Pa., by the Bridgeford Machine Tool Company, Rochester, N. Y., is illustrated herewith. It is a 36-in. motor driven patent geared head lathe, with a 32-ft. bed and has several special features. The design throughout is such that it will give the service that would be required of it in a modern shop where high speed steel tools are used.

The drive is from a 15-hp. Westinghouse motor having a speed variation of from 300 to 900 rev. per min., connected to the driving shaft of the lathe through a rawhide intermediate gear. There are 15 changes of speed ranging in geometric progression, and obtained through a speed variator in the headstock. When the lathe is belt driven the gear on the driving shaft is replaced by a pulley running at a constant speed of 300 rev. per min., and the ratios of the gearing are such that one revolution of the face plate is obtained with from 2 to 98.1 revolutions of the pulley; or, in other words, the spindle speeds range from 3 to 150 rev. per min., which are sufficient for

lb., but it can be built with any length of bed desired, and furnished with all regular attachments. Motors varying from 15 to 25 hp. are used, according to the requirements. A constant speed motor may be used, although a variable speed is preferable. This type of lathe is built with 26, 32, 36, 42 and 48 in. swing.

Pennsylvania's Abandoned Canals and Railroads.

The Pennsylvania State Railroad Commission has begun an inquiry into the status of all abandoned canals and railroads in the State, under the provisions of a resolution adopted by the last Legislature, which had in mind the recommendation of such legislation as may restore them to transportation. The investigation is expected to occupy a year, and bids fair to be one of the most important ever undertaken in Pennsylvania, as there are over 100 charters of canals on the statute books and possibly twice as many railroad charters. In many instances these charter rights were never exercised, but in others the canals or railroads were built and became inoperative from various causes. The investigation will



A 36-In. Patent Geared Head Lathe with Motor Drive, Built by the Bridgeford Machine Tool Works, Rochester, N. Y.

all purposes. A variable speed motor, however, adds to the efficiency of the tool, since it enables the operator to obtain a wide range of speeds without leaving his position at the carriage; the controller with its resistance is mounted on the back of the bed, but is operated through a splined shaft from a lever mounted on the apron.

All driving gears within the head are steel and run in oil, and the bearings are arranged to receive a constant supply of oil to insure good mechanical efficiency and minimum wear. The lathe is designed to give a pulling effort on a 36-in. diameter of 20,000 lb., which is about four times that of the average cone driven lathe of equal size.

A feature, which is of especial advantage on a lathe of the length of this one, is the rapid power traverse by which the carriage may be moved at the rate of from 15 to 45 ft. per minute, according to the speed of the motor. It is driven by a splined shaft, and operated by the vertical lever on the left end of the apron, which controls two friction clutches. The latter with the gearing run in oil.

The lead screw, motor control shaft and rapid traverse shaft are supported by automatic carriers, which slide in a planed strip on the foot of the frame. One of these always remains at the center of travel, while the other is pushed along by the carriage. This is an improvement over supporting them from the top of the frame, as it allows free travel of the tailstock.

The total weight of the machine shown is about 2900

be made into the terms of the charters, the work done and the present ownership and condition of the properties.

When this information is collected the commission is charged with the duty of recommending laws "as shall enable the State to take any existing canals which are now parts of abandoned canal systems and to recover, as far as may be lawfully done, the aforesaid abandoned canals and restore them to the highways of transportation, and to establish, under proper and liberal laws, canal companies independent of railroad control, to recommend legislation whereby the aforesaid railroad franchises, so abandoned, and any work which may have been done under them, may be taken and sold to an independent and competitive railroad company." The commission is to report to the Governor, and there is a legislative provision that the Attorney-General shall take steps to secure the charters of the abandoned railroads.

Reports are current that the American Steel & Wire Company is dismantling its plant at New Haven, Conn., recently purchased from the National Steel & Wire Company. It is officially stated that such is not the case. The plant is idle, but the only machinery that has been removed is one large machine which was transferred to Cleveland, where its services could be better employed. The works at New Haven have been cleaned up, and upon the resumption of a large demand for wire products they will undoubtedly be opened by the new owner.

Gisholt Turret Lathe Work.

This is the third article under the above title printed in *The Iron Age* dealing with methods of finishing gas engine parts in accordance with the practice of the Gisholt Machine Company, Madison, Wis. The first, which appeared January 30, 1908, described two methods of finishing flywheels. The second, in the March 5, 1908, issue, covered a method of machining gas engine pistons and one for forming piston rings. The present article

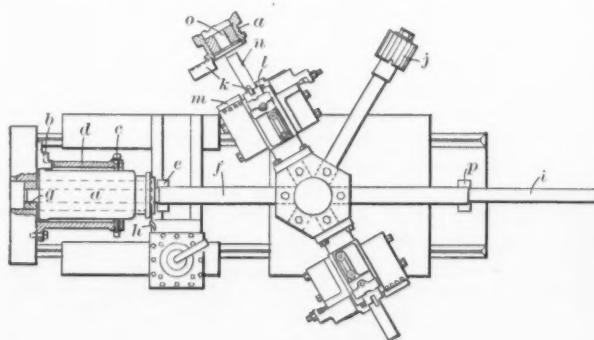


Fig. 1.—The Setting for the First Operation of Finishing Gas Engine Cylinders in a Gisholt Turret Lathe.

deals with cylinders, Figs. 1 and 2 showing a method of finishing them in two settings, and Fig. 3 the manner of chucking a different type of cylinder.

Referring to Fig. 1, it will be seen that the piece *a* is centered and held by the chuck jaws *b*, while at its outer end it is further supported by the set screws *c* in the chuck bonnet *d*. This bonnet is bolted to the chuck and has slots to allow the chuck jaws to be moved in and out as necessary. While the cylinder is rough bored with the cutter *e* in the boring bar *f*, which is supported in the chuck bushing *g*, the scale is broken on the end of the piece by the tool post tool *h*. The boring bar *i*, carrying the cutter *p*, is used for finish boring, being supported in the bushing *g* the same as the bar *f*. The hole is then brought to size with the floating reamer *j*. It is considered by some to be better to do the reaming during the second operation so as to allow the cylinder time to cool, but the design of the cylinder has much to do with this, and there may be no benefit to be derived from that

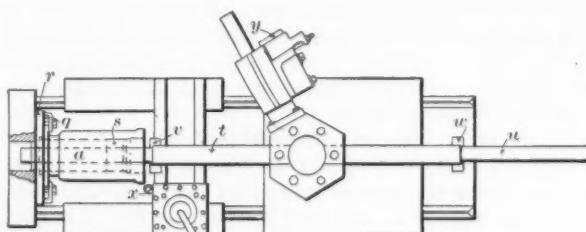


Fig. 2.—The Setting for the Second Operation.

procedure. For finishing the end of the cylinder and the counterbore, the cutters *k*, *l* and *m* in the facing head are used, and the head is supported by the arbor *n* inserted in the bushing *o* in the finished hole.

For the second operation the piece is held, as shown in Fig. 2, by the clamps *q* to the face plate *r*, which is bolted to the face of the chuck. The piece is centered by a counterbore in the chuck plate having the same size as the hole in the crank case. The bushing *s* is inserted in the piece for supporting the boring bars *t* and *u*, and the counterbore is finished with the cutters *v* and *w* shown in the boring bars. The end of the piece is roughed off with the tool post tool *x* and is finished with the cutter *y* in the facing head, which is supported by the arbor inserted in the bushing *s*. The cutter *y* is a serrated cutter giving a rough face to the end of the cylinder for holding the packing. If it was decided to best to ream the bore on the second operation, the reaming would follow the finishing of the counterbore.

Fig. 3 shows the method of chucking a different shape of gas engine cylinder and employs a device consisting of a special bonnet bolted to the face of the chuck. As illustrated the hinged strap is shown thrown back to allow removing the finished cylinder. When a new piece of work is inserted, this strap is swung down over the piece and bolted in place. As may be seen, set screws

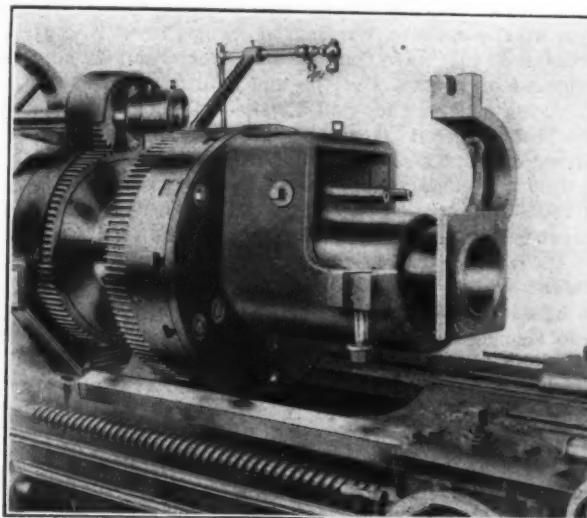


Fig. 3.—A Special Bonnet for Chucking a Different Type of Cylinder.

are used to compensate in the adjustment for slight variation in the size of the castings.

A Cupola Demonstration.—Arrangements have been made by J. de Clercy, Montreal, Canada, agent for the Société Anonyme d'Exploitation des Brevets Cubilot A. Baillot, to exhibit a cupola in operation in connection with the convention of the American Foundrymen's Association and the exhibit of the Foundry Supply Association to be held in Toronto June 8-12. This cupola is now being erected at Toronto in a temporary building adjoining Machinery Hall. The blast for the cupola will be furnished by a Sturtevant blower operated by a steam turbine. It is the intention to put on the blast in the morning and to pour iron for an hour and then to bank the cupola for two hours at lunch time. Later it will be running in the afternoon for two hours or more. The point to be demonstrated is the possibility of furnishing a small amount of iron continuously for a long period with only a moderate consumption of fuel, and also the possibility of starting and stopping the cupola at will. Arrangements have been made for pouring a large number of molds for light, delicate castings.

A. S. M. E. Monthly Meeting.—The monthly meeting of the American Society of Mechanical Engineers to be held Tuesday evening, May 12, in the Engineering Societies Building, New York, will be given to the presentation of a paper by Henry Souther of the Henry Souther Engineering Corporation, Hartford, Conn., on the subject of "Clutches," with special reference to the types used on automobiles. Their development will be shown by lantern slides. The meeting will be important not only to those directly interested in automobile construction, but to all who have to do with the use of clutches for machine tool work, power transmission, hoisting machinery, textile and other classes of machinery. The paper will be followed by a discussion of their design and use, to be continued at the semiannual meeting of the society at Detroit, Mich., June 23-26.

The Kansas City Steel Casting Company.—The Kansas City Steel Casting Company, Kansas City, Mo., has completed a new foundry plant designed especially for making steel castings, of which it has capacity to turn out 10 tons per day. The first heat will be taken off this week. The members of the new company are F. R. Strunk, H. F. Hamacher and G. R. Strunk.

Wisconsin Ore Lands Bought by the Steel Corporation.

Important Baraboo Range Deal.

DULUTH, MINN., May 2, 1908.—The Oliver Iron Mining Company (United States Steel Corporation) has taken over all the lands on the Baraboo range, in south central Wisconsin, that have been gathered together and in part explored by Messrs. La Rue and Whitesides of Duluth, excepting such as they had disposed of some time ago to the International Harvester Company and to Rogers, Brown & Co. This deal was closed after thorough examination and exploration by the Oliver Company, in which it found the ore lenses wide, long and persistent. The Baraboo District has been described in *The Iron Age*, but at the risk of repetition the following may be briefly stated:

The iron ore deposits of this district lie wholly in the iron bearing member of the Freedom formation, which member has a thickness of some 500 ft., with a gray slate below and a dolomite above, while beneath the slate is a quartzite, quite similar to those of the Lake Superior region. This quartzite forms a trough, and the development of the iron deposit has been along the exposed southern edge. The iron bearing member is a continuous formation and extends many miles along the valley, so that its possibilities of ore are tremendous. Indeed, it is quite certain that a vast tonnage will be mined there of varying grades of ore, some of which may not now be available. The thickness of that part of the deposit containing about 53 to 55 per cent. of iron is not far from 15 to 25 ft., and lies on the upper side of the iron bearing rock. In addition to this a thickness of leaner ore, perhaps some time suitable for mining, is variable and in places tested well above 200 ft. All ore must be mined from shafts, and there is considerable water coming down from the limestone above, which in its turn is overlaid by a heavy capping of sandstone, underneath glacial drift.

The Oliver Iron Mining Company in its lease has agreed to take up development at once, and will doubtless begin the sinking of working shafts at an early date, in preparation for mining ore the coming year.

About 200 Miles from the Gary Works.

The district is some 200 miles from Gary, Ind., and is reached from there by the Chicago & Northwestern Railroad for about 100 miles of the way and the Elgin, Joliet & Eastern Railroad, belonging to the United States Steel Corporation for the remaining distance. The Northwestern road has an effective rate of 70 cents a gross ton from the district to Chicago, and has been hauling ore at that rate from the Illinois mine of the International Harvester Company to that concern's works at Chicago at the rate of about 1000 tons a week for three years. It will not be surprising if the road gives a better rate when the Oliver Company begins work, on account of the larger tonnage likely to be mined.

The haul to Gary is to be compared with the 80 miles of rail from the Mesaba range to Duluth and the 800 miles of lake and the haul by rail from lower lake ports to furnaces, whatever that may be, depending on where these furnaces are situated. In the matter of transportation from Baraboo, there is no need of stock piles at docks, for the winter is no great bar to shipments, and there is no transshipment from cars to ships and back again, giving the new district an advantage that goes far to compensate it for more expensive mining costs. The royalties are lower than on the Mesaba or than in most parts of Lake Superior.

Three important consuming interests are now concerned in the district—namely, the United States Steel Corporation by this lease and by the further purchase of additional lands that will make its holdings quite extensive, the International Harvester Company in its Illinois mine, and the furnace firm of Rogers, Brown & Co. In its Iroquois mine, which has not been opened. Individuals connected with the Pittsburgh Steel Company have considerable holdings of lands on the range, and have spent large sums, possibly \$250,000, in exploration and pur-

chase, but are doing nothing at present. The new deal of the Steel Corporation marks an innovation in the term of leases, being for 99 years. To the best of the writer's recollection there is no lease on the Mesaba that runs longer than 50 years, and the 50-year lease is a thing of quite recent years, except in the case of the State as lessor and for a few private individuals.

Marquette Range Activities.

On the Marquette range the Oliver Iron Mining Company is completing important surface improvements at its Section 21 mine, and will be able to make a big tonnage there when desired. These consist of additional steam capacity, a complete underground electrical tramming system, a new and consolidated pumping plant to carry all water to surface by one shaft, &c. Underground the mine has shipped nothing for 18 months, but development has carried two shafts down another level, one to 860 and the other to 750 ft. Drilling west from Ishpeming has been proving the formation good there, and additional mines will probably result, to the lasting benefit of both Ishpeming and Negaunee, which years ago supposed their life limited to what was then in sight. The persistence of the Lake Superior formations is well shown by the fact that not only are these new finds being made, but several mines of the utmost importance have already been opened and are mining in that field, then considered of no value for exploratory purposes.

The Cleveland-Cliffs Iron Company has for some time been drilling on a large tract of land lying west of Ishpeming. In addition to work on its own land, the company has taken many options and has explored some of them. In the course of this work excellent indications have been met with at various points, and several seams and lenses of ore of fair to good quality have been cut. One of these is on the shore of North Lake, in township 47-28, where a presumably good body of ore is being found. It is of sufficient importance to call for a shaft, and this will be sunk at once; buildings for men and material are under way. The field is a new one, and therefore very indefinite and problematic, but the company will explore thoroughly, and to this end a shaft and drifts and crosscuts are needed. Drill holes, while good in their way and of much value in determining formations and indications, do not rank with actual underground openings in revealing the real situation. The ore bearing formation extends west from Ishpeming at least as far as L'Anse, but the actual discoveries of merchantable deposits of iron ore there have been few. This may be due as much to faulty and incomplete exploration and development as to the absence of ore, and it may be that present operations carefully and completely done, as they are sure to be, will result to the great advantage of all concerned. For this reason the work now under way is of especial importance.

On the Menominee.

A good deal of work has been done recently in that portion of the Menominee range that lies north and west of the main mineral belt, and toward the Republic fold of the Marquette, and it is not impossible that it will show a connection between the two. Pickands, Mather & Co. and Duluth parties are working there with some success and material encouragement. This is the so-called "red rock" section. A heavy overburden of drift exists there, and exploration is slow and somewhat in the dark. The Republic mine, though opened to about 2000 ft., and a large and persistent producer of good ore, has been alone in its district, though attempts have been made at various times to produce other mines. For a long time there has been a feeling that mines should be discovered in the neighborhood, and it is possible that this new work will prove them.

At the Pewable mine a recent raise in No. 1 workings encountered a cavern, or vug, of about 65 ft. length, 35 ft. width and 25 ft. average height. This cave was entirely lined with calcite crystals and iron pyrites, and presented a most beautiful spectacle. At No. 1 shaft the installation of a new hoist has compelled the retimbering of the shaft, and work has been stopped there for the time being. Both Nos. 1 and 2 shafts have now been sunk another level, and the fine steel shaft house at No. 1 is completed. Men taken from the work in No. 1 have

found places elsewhere in the same mine. This property will make good shipments this year, though not so large, of course, as usual.

Cuyuna District Operations Meet Difficulties.

Sinking operations in the Cuyuna District, by the Rogers-Brown Ore Company, are constantly meeting serious obstacles. The shaft was started as a drop, and after getting to hard pan some time ago, it was decided to change the method and timber below in the customary manner. A few feet had been made in this way, when the hard pan came in with a tremendous rush of water and the shaft was drowned. Pumping capacity was not great, and it was impossible to cope with the difficulty for some weeks. But a short time ago the bottom timbers were gotten into place and sinking was slowly resumed, the drop shaft method being once more adopted, after considerable difficulty in starting. But with a drop of 2 ft. in the shaft there was another severe boil of quicksand, filling the shaft about 20 ft. with material and covering part of the pumps. The shaft was drowned out about two weeks ago, but work has been resumed. The total depth is about 91 ft., which has been accomplished by hard work continued for more than six months. The shaft is now closed to ledge.

This is the second shaft sunk in the district. The first was by Pickands, Mather & Co., and in that little trouble was experienced from water and sand. It was sunk to the desired depth of something more than 115 ft., and a drift extended as desired. But the ore formation was found streaky and uneven, and was much leaner than the drill hole results had given the operators reason to look for, so the operation was abandoned. Rogers-Brown operations are on another portion of the formation, where the drill holes had shown remarkably good ore, and, apparently, a considerable tonnage of it.

With the commencement of sinking for this shaft, drill operations throughout the district have ceased for part. Most of the larger operators are idle, awaiting results. That the Rogers-Brown Company is not disheartened by the delay is shown by the fact that it has started sinking a second shaft in section 30, T 46-28, about 9 miles southwest from the present shaft, and 1½ miles from the main line of the Northern Pacific Railway, and 8 miles from the village of Deerwood. The ground is not supposed to be so wet, nor to consist of quicksand, though it is a region of drift, with many lakes and small streams.

An interesting and significant fact in connection with the water level in the Rogers-Brown work is that when the shaft is drowned the water stands several feet higher than that of the adjacent lakes and ponds. It would almost appear as though there might be some connection, by sand and gravel strata, with the Mississippi River at a higher level, in which case the water problem is a serious one.

Miscellaneous Notes.

Not long ago a land broker of St. Paul, holding some State leases lying about half a mile north of the north line of the Mesaba formation in section 16-58-20, advertised the organization of a company to explore for iron ore, and accompanied the advertisement by an engineer's report to the general effect that the land was likely to be valuable for its iron ore deposits, that it was on the Mesaba formation, and might make as good a mine as some that were mentioned. The facts are that this land lies some distance north of outcroppings of the underlying quartzites, and is therefore not on the Mesaba iron bearing formation at all. Should any ore be found in the granite of this tract it could not be on the Mesaba range, and the general consensus of opinion among mining men was that to search for ore there was practically useless. How successful the sale of stock proved is unknown, but the company was withdrawn from the lists a short time ago. There has been almost an entire absence of wild catting on the Mesaba since 1892, and it has been singularly free from the presence of the uninformed and the dishonest promoter, which is a fact that mining men of the region have prided themselves upon.

The Cleveland-Cliffs Iron Company is pushing the in-

stallation of its new town site of Gwinn, on the Cascade Range, and has recently published a map of the town, which gives a good idea of what it will be. This work is carried on with the most advanced ideas of beautification and landscaping, and is under careful and expert direction. It will be the most tasty place on the old ranges, and will vie with the new Oliver town of Coleraine, on the west Mesaba, in everything that tends toward comfort and higher opportunities for living.

The instances in which mine operators have as yet received notification of what will be expected of them this year—or if anything at all is wanted from them—are few. Nearly all the independent companies, as well as the Oliver Iron Mining Company, are utterly in the dark as to what will be required in the way of shipments. Most of them have reduced their force to the lowest limits practicable, and few, aside from the Oliver Company, are doing anything other than in the way of carrying forward development that is either necessary to secure some other work, or will be required for any mining they may conduct later.

Several stripping jobs on the Mesaba, suspended last fall, have recommenced, and are in full progress with plenty of men, willing, this year, to work steadily and without too much supervision. The cost of doing work has been materially lessened this spring. D. E. W.

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The National Treasury.

The first 10 months of the fiscal year closed April 30 with a deficit in the United States Treasury of \$51,645,829. Of this deficit, \$15,970,678 is due to the excess of expenditures over receipts in the month of April alone; that is, the Government expended in April an average of \$500,000 each day more than it took in. It is probable that the deficit for the fiscal year, which will end June 30, will be not less than \$75,000,000. It may go as high as \$80,000,000. On May 1, last year, there was a surplus in the Treasury amounting to \$56,474,886.

Since the beginning of this fiscal period the receipts from customs have been less than in the corresponding 10 months of last year by \$34,000,000, and the internal revenue receipts have been \$14,000,000 less. In April the customs returns were \$7,000,000 less than in the same month of 1907, and the internal revenue receipts \$2,600,000 less. On the other hand, the expenditures of the Government in the last 10 months have been \$67,000,000 more than in the same months of the fiscal year 1907, in the month just ended the expenditures were nearly \$12,000,000 more than in April of last year.

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A New Canadian Pacific Rail Section.—The Canadian Pacific contract for 40,000 tons of 85-lb. Bessemer and open hearth rails with the Dominion Iron & Steel Company and the Algoma Steel Company calls for a new section which is quite similar to the Series A section recommended by the committee of the American Railway Association and shown in *The Iron Age* of November 28, 1907, page 1540. It differs from the Series A rail in taking more metal from the head to add to the base, while the web has been reinforced. It is required that carbon average between 0.57 and 0.59 per cent. for Bessemer rails, and the limits are 0.56 and 0.66, with an average of not less than 0.60 per cent. for open hearth rails. The limit of phosphorus is 0.08 per cent. for Bessemer and 0.06 for open hearth rails. The manganese limits are 0.80 and 1 for all rails. For the drop test a section of rail is to be tested from every third Bessemer heat, and the weight is to fall 18 ft. If a heat is rejected similar tests shall be made of rails from the preceding and succeeding heats. For open hearth rails three sections of rail taken from the top of the first, middle and last ingots of each 50-ton heat are to be tested. The heat is to be rejected unless two of the tests stand. The *Railroad Gazette* says that from reports made to the company by its inspectors the new rail requires less cold straightening and less camber. It is also stated that the temperature is more uniform throughout the rail after leaving the rolls than in the old A. S. C. E. section.

Stockholders' Gains from the Canadian Bounties.

The iron and steel industry in Canada on a modern scale dates only from 1896. Before 1896 there was a 125-ton furnace at Londonderry, Nova Scotia. There was a second furnace of a similar capacity at Ferrona, near New Glasgow, also in the Province of Nova Scotia; and there were three small charcoal iron furnaces using bog ore—two at Drummondville and one at Radnor, both in the Province of Quebec. All these furnaces were earning Dominion tonnage bounties under the act of 1883, and the continuing enactments passed by the conservative governments which were in power at Ottawa from 1879 to 1896. But the aggregate capacity of the five furnaces was not more than 300 tons a day, and up to 1896 no steel had been made in the Dominion of Canada.

Prodigality of Bounties Since 1896.

The Liberals when they came into power in 1896 at once infused new life into the industry by the prodigality of the bounty system which they established. Under the Liberal government \$1000 has been paid out for every \$10 expended by the Conservative governments between 1883 and 1896. The Liberals found the national policy well established, and they determined to go even further than the Conservatives. In no department of Canadian industry has this been more obvious than in the iron and steel business. Between 1896 and January 8 of this year the large sum of \$10,947,690 was paid in Dominion bounties to 13 iron and steel companies in Quebec, Nova Scotia and Ontario. In addition to the direct payments out of the public revenue, iron and steel companies of Nova Scotia have had the advantage of specially low freight rates over the Government railroad—the Intercolonial system by which the three maritime provinces are brought into connection with Montreal and western Canada. They have also had the advantage of tariff duties on pig iron, steel billets, structural steel and steel rails; and in 1904 the anti-dumping law was enacted to give additional protection to the wire rod mill at Sydney.

These are the advantages direct and indirect which have been lavished on the industry since 1896. But although bounties alone have figured for nearly \$11,000,000 in the receipts of iron and steel companies, the Hamilton Iron & Steel Company is the only one of the Canadian companies in which the directors have publicly "cut a melon" for their shareholders. In the case of the two largest concerns—the Dominion Iron & Steel Company and the Algoma Steel Company—the holders of common stock have not received a cent as a return on their investments.

The Hamilton Company's Prosperous Career.

The Ontario Rolling Mill Company and the Hamilton Blast Furnace Company, both of which in 1900 were absorbed by the Hamilton Steel & Iron Company, were the first of the Ontario undertakings to go on the bounty list. They were scheduled there by 1897, and the bounty payments to the present company since the absorption of the two older companies have ranged from \$167,470 in the fiscal year 1900-1901 to \$224,546 in the calendar year 1907. From the beginning of the fiscal year 1898-1899 until the end of 1907 these companies had received in round figures \$1,500,000 from the Dominion treasury, in addition to some smaller bounties which for a few years were paid by the Government of the Province of Ontario.

Dividends were not paid for some little time previous to 1907, and in that year the Hamilton Steel & Iron Company added a 250-ton blast furnace to its plant. At this time its capital stock stood at \$1,513,000. At the end of the year back dividends were paid, and a rearrangement of its capitalization was agreed upon by which a goodly stock dividend was to be distributed. No other company in the iron and steel business in Canada, whose accounts are made public, has done so well as the Hamilton Company. It has done so astonishingly well that Ontario newspapers whose proprietors are not directly interested in the Hamilton plant, or in the plants of the Nova Scotia Steel & Iron Company, are insisting that it was a mistake on the part of the Laurier government to extend

the bounty system to 1912, as was done at the time the tariff was revised in November, 1906.

The Dominion Iron & Steel Company's Record.

The Dominion Iron & Steel Company last year received \$1,223,200 in bounties, and all the taxation—municipal, provincial or Dominion—it paid was the customs duties on any equipment it imported. It has received nearly \$5,000,000 since it went on the bounty list at Ottawa in 1900. The company is capitalized at \$35,000,000. Its bonds aggregate \$10,000,000, its preferred stock \$5,000,000, and its common stock \$20,000,000. Interest on the bonds has been regularly paid. The preferred stockholders for two years, 1901-1903, also received a dividend, but this was paid out of capital, under an act of the Provincial Legislature at Halifax, which authorized such a payment for a period of two years, while the plant at Sydney was being completed.

Payment of dividends to preferred stockholders ceased in April, 1903, more than a year before the rail mill was at work, and since then neither the preferred nor the common stockholders have received any dividends. Most if not all of the favors bestowed on this company by the Dominion, the provincial and the municipal governments seem to have been regarded as personal to the little group of promoters who in 1899 organized the company. These favors, moreover, seem to have been capitalized on a fairly lavish scale; so lavish, in fact, that the earnings of the company and the bounties it has had from the Dominion Government have never been sufficient to pay any dividends on the common stock.

The Nova Scotia Steel & Iron Company Does Well.

The Nova Scotia Steel & Coal Company, whose iron and steel plant is on the opposite side of Sydney Harbor to the plant of the Dominion Iron & Steel Company, has done much better for its preferred and common stockholders. As its share of the bounties disbursed by the Ottawa government since 1896, the Nova Scotia Iron & Steel Company and the Nova Scotia Steel Company, which it absorbed in 1900, have received not less than \$1,030,000. The amount annually received by the company under its present title has ranged from \$138,456 for the fiscal year 1900-01 to \$179,210 in 1907. The company is now capitalized at \$9,838,000. Its 6 per cent. bonds aggregate \$3,838,000; its 8 per cent. preferred stock, \$1,030,000, and its common stock, \$4,970,000. It is exclusively a Canadian undertaking, both as regards its promotion and its directorate. It has paid interest continuously on its bonds; its preference stockholders have had their 8 per cent. and dividends on the common stock in recent years have ranged from 5 to 6 per cent.

Last year was the best in the history of the company as regards its iron and steel business. In February, 1908, the dividend on the common stock was at the rate of 6 per cent. per annum. The coal and ore business of the company in 1907 was not so good as in 1906, but the profits from mining and the manufacture of iron and steel totaled \$94,790, including the \$179,210 from the Dominion government paid in bounties on pig iron and steel ingots. Of the iron and steel companies whose accounts are made public, the Nova Scotia Company, next to the Hamilton Company, has earned most for its shareholders. Its bounty payments since 1898 must well nigh have paid for the 250-ton furnace, the four open hearth furnaces and the by-product coke ovens which between 1903 and 1908 were installed at Sydney Mines, where the company established its new plant after it had come into possession of the ore deposit in Wabana Island, Newfoundland. For two years past its old furnace at Ferrona has been out of blast.

What Other Companies Have Done.

About \$1,200,000 has gone to the Algoma Steel Company, which did not get on the bounty list until 1902. Its receipts for bounties last year were \$556,268 on pig iron and steel ingots. Unlike the Dominion Company, the Algoma Company has no rod mill and has consequently had no advantage from the \$6 bounty on wire rods. The steel plant at the Sault is one of eight or nine Clergue enterprises. Some of them are not fully developed. As yet they are not all making money, and no dividends to ordi-

nary stockholders are traceable in the stock exchange annals which concern themselves with the earnings and dividend distributions of Canadian industrial companies.

Until 1900 the Canada Iron Furnace Company, which now owns a charcoal furnace at Radnor, Quebec, and a coke furnace at Midland, Ontario, was on the bounty list only in respect of the Radnor furnace. In 1900, however, the furnace at Midland began to make iron, and since then there have been years when as much as \$98,000 has been paid at Ottawa on the output of the Radnor and Midland plants. The company's share in the bounty disbursements since 1896 has aggregated a little more than \$500,000. Last year it received \$13,850 on iron made at Radnor and \$32,577 on iron made at Midland. The Radnor Furnace uses Canadian ore exclusively, and was consequently paid on the higher bounty scale of \$2.10 a ton. The Midland Furnace is run principally on American ore, and is accordingly on the lower scale, \$1.10 a ton. The company is controlled by two or three Montreal capitalists. Details of its earnings and of its dividend distributions do not find their way into the financial pages of the Montreal or Toronto newspapers, but the fact that it is adding a 250-ton furnace to its iron making equipment at Midland is proof that, like the Hamilton Company, it has thriven well.

The 125-ton furnace of the Londonderry Iron & Mining Company at Londonderry, Nova Scotia, first went on the Dominion payroll just a quarter of a century ago, when its only companions on the bounty list were the two small charcoal furnaces at Drummondville, in Quebec, owned by the Macdougall Company of Montreal. It is the historic furnace of Canada, because it was to relieve the company which owned it in the early '80s that in 1883 the present bounty system was established. But the Londonderry Furnace has not been continuously on the list. It was off from 1897 to 1902 and its share of Dominion bounty payments has not exceeded \$120,000.

The Government Does Not Concern Itself About Stockholders.

The Dominion Government is very easy with the recipients of its industrial bounties. It exercises not the least control over the capitalization of the iron and steel companies which claim a place on the bounty list. It leaves it to investors to look to themselves when promoters are putting out preferred stock or common stock, and are emphasizing in their glowing prospectuses the largesse that the concern can draw from the Dominion treasury. The Government, moreover, has been utterly indifferent to the earnings of the iron and steel companies during the 25 years over which the bounty system has now extended. It has never made a regulation that earnings and profits shall be reported to the State Department, that pays out the bounties. All that is necessary for these payments by the Government is a certificate of production, setting out quantities and the description of ore used—Canadian or imported. The result is that when an iron and steel company's stocks are not largely dealt in on the exchanges of Montreal and Toronto, no details of its earnings and dividends find their way into the newspapers, the financial annuals, or any of the official reports of the Dominion Government. It is thus possible to trace in the stock exchange annuals the earnings and dividends of only three of the 13 iron and steel making companies that are on the bounty list—the Dominion Company, the Nova Scotia Company and the Lake Superior Corporation, of which the Algoma Company is a subsidiary undertaking.

It is just as well for the peace of mind of the Government at Ottawa that it calls for so little information from its beneficiaries, that it asks no questions about capitalization, earnings and dividends, for when the news of the proposed "cutting of the melon" at Hamilton found its way into the newspapers there were complaints in and out of Parliament that the handsome stock dividend there was proof that the bounty business was being overdone. Ontario farmers, in their granges and other provincial organizations, have for years been protesting with much vigor and persistence against the bounty system, and the developments at Hamilton have resulted in a renewal of the farmers' demand—made

before the Tariff Commission of 1905-6—that "the iron tubs, like all other tubs, should stand on their own bottoms."

E. P.

Steel and Wrought Iron Production in France.

The Comité des Forges de France has just published the statistics of the production of steel and wrought iron, obtained directly from the works. The figures for previous years are the official data gathered by the Ministry of Public Works.

France is progressing rapidly in the manufacture of steel, having made 2,677,805 metric tons of ingots in 1907, as compared with 2,436,322 tons in 1906 and 2,240,284 tons in 1905. More than one-half is produced in the District of Meurthe-et-Moselle, with 1,406,841 tons in 1907 and 1,260,736 tons in 1906. The Nord and Pas-de-Calais follow with 606,462 tons and 515,562 tons, respectively, and the Centre, once the greatest district in France, with 231,522 tons and 197,486 tons, respectively. Out of the total production of ingots 2,606,920 tons was used in 1907 at the works, producing the steel, and only 70,885 tons was shipped to other plants. The make was distributed as follows:

Production of Steel Ingots.			
	1907.	1906.	
	Tons.	Per cent.	Tons.
Acid Bessemer.....	77,421	2.9	107,978
Basic Bessemer.....	1,630,511	60.7	1,494,667
Open hearth.....	955,555	35.7	833,677
Crucible and electric...	14,318	0.5	
Totals.....	2,677,805		2,436,322

The materials used in the manufacture of steel in 1907 comprised 35,000 tons of iron ore, 91,152 tons of Bessemer pig iron, 1,852,506 tons of Thomas pig iron, 61,179 tons of manganiferous iron, 203,927 tons of forge iron, 143,621 tons of special pig iron, 35,750 tons of muck bar and 581,055 tons of old material.

The production of blooms was 982,170 tons and of billets 538,104 tons, there being delivered to other than the producing plants 290,270 tons of blooms and 162,399 tons of billets. It is interesting to note that out of the total of 1,224,373 tons of blooms and billets credited to the Bessemer converter 290,315 tons were made by the duplex process.

The production of finished products was as follows:

Production of Finished Steel.—Metric Tons.			
	1907.	1906.	1905.
Rails.....	297,762	328,474	303,475
Tires.....	43,845	41,657	22,959
Beams.....	107,488		
Various shapes.....	320,295*		
Merchant bars.....	397,621		
Machinery.....	95,302	891,034	754,894
Wire.....	57,803		
Tubes and pipe.....	34,737		
Tin plate.....	36,578		
Sheets and plates.....	352,042	366,080	312,712
Forgings.....	33,570	29,773	22,762
Castings.....	31,505	26,549	25,269
Totals.....	1,808,548	1,683,567	1,442,071

* Out of this total returns aggregating 160,144 tons lump together beams, shapes and bars, and 69,318 tons cover various finished products not specified.

The Meurthe-et-Moselle District produced 690,150 tons of the total in 1907, while the Nord is credited with 472,448 tons and the Centre with 216,130 tons.

The production of wrought iron and welded steel was 687,249 tons, as compared with 747,900 tons in 1906 and 669,841 tons in 1905, the details being as follows:

Production of Wrought Iron.—Metric Tons.			
	1907.	1906.	1905.
Bars.....	498,758		
Beams.....	12,878		
Various shapes.....	15,180	652,300	584,702
Wire.....	37,738		
Tubes.....	11,800		
Forgings.....	2,643	6,100	4,136
Sheets and plates.....	108,252	89,500	81,003
Totals.....	687,249	747,900	669,841

Included in the total of 498,758 tons of bars made in 1907 are 45,735 tons of different products, the details of which are not available. Over one-half of the total output of wrought iron is made in the Nord District, the quantity being 354,654 tons, of which 65,800 tons were sheets and plates.

The Clark Boiler Flue Cleaner.

A machine that planes all scales, rust, soot and dirt from the interior of tubular boiler flues without occasioning any interruption in the operation of the boiler is likely to interest those who appreciate how desirable it is to keep the flues of boilers free from such foreign matter. The true importance of so doing is often lost sight of in comparison with the trouble of thoroughly cleaning when that entails the shutting down of the boiler, because it is not commonly realized how great is the loss of efficiency when the flues are dirty. The accumulated material on the flues is a poor conductor of heat, and it is stated that 1-32 in. of soot will increase the amount of heat required to evaporate a given amount of water, 15 per cent., while $\frac{1}{4}$ in. of soot will require 70 per cent. more heat.

The machine illustrated and recently patented by the Fred Clark Boiler Cleaning Company, 93 Nassau street, New York City, is one which is claimed to do just what was stated above. Its operation as applied to the particularly difficult problem of cleaning upright boilers is especially interesting, for it is believed to be the first practical method of cleaning such boilers thoroughly. The usual method of blowing live steam through the flues seldom removes more than the loose soot, and the moisture introduced tends to add to the incrustation. To pass steel brushes through the flues means putting the boilers out of commission, taking off the dome, and at the best a dirty, tedious and unsatisfactory job, as it is seldom that the brushes can entirely remove rust and scales. Again this method has very little effect on the deposit produced when water in combination with soot bakes upon the interior of the flues.

Fig. 1 shows an interrupted compressed view of the complete apparatus. The frame is made up of separable sections of 1-in. tubing connected by couplings, including a handle, a long straight slotted tube and a curved tube terminating in a spider at D. The straight section of the tube carries a sliding handle A, an adjustable stop B and an adjustable supporting leg C, which is pivoted so that the apparatus may be folded and more easily carried when taken apart. When in use the supporting leg C rests on the floor just outside of the firebox, the curved part of the tube is in the furnace and the spider D is pressed against the lower end of the flue. The middle section varies in length according to the length of flues to be cleaned. Through the slot on the side of the handle A is connected by a screw to a cylindrical block approximately fitting the inside of the pipe. This block is connected by two steel tapes, portions of which are shown in various places, reaching through the forward end to the cleaner head.

An enlarged detail of the head, represented in a section of flue, is given in Fig. 2. It is this head which does the actual work of cleaning the flue, and is the essential feature of the apparatus. The remainder of the parts are simply means of sliding the head up and down through the flue. The head consists of pivoted blades with cutting

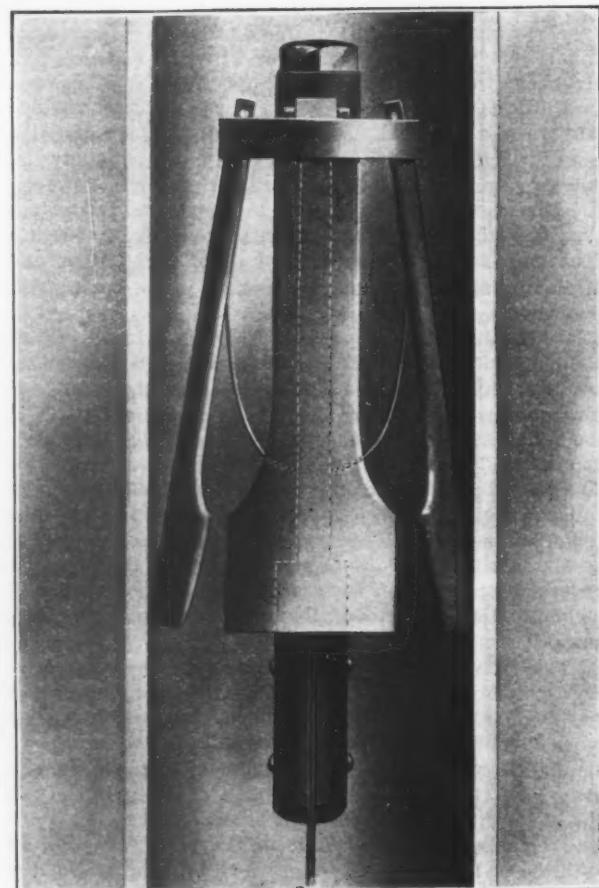


Fig. 2.—The Head as It Appears When Inside of a Flue.

edges at their free ends which are disposed at such an angle that they have no tendency to cut into the metal of the flues, and in fact are not sharp enough for that, but nevertheless get back of and in under the incrusted matter, removing it after the manner of a chisel. As the head is pushed upward through the flue the blades yield, but on the downward movement the springs which tend to hold the blades outward cause them to take hold.

To guard against the trouble which would be experienced if the head was pushed clear through the flue, the apparatus is first made ready by substituting for the head a spring device which can be brought back after it is shoved clear through the flue. This is roughly the size and shape of the head, except at the lower end where the springs, instead of ending in sharp edges, are bent inward toward the center and down again parallel with the center supporting rod. When this device is passed up a flue it is easy to detect when the top is reached by the expanding of the springs. This, then, is the extreme height to which the head should later be pushed, and the stop B on the slotted section of the cleaner holder is set,

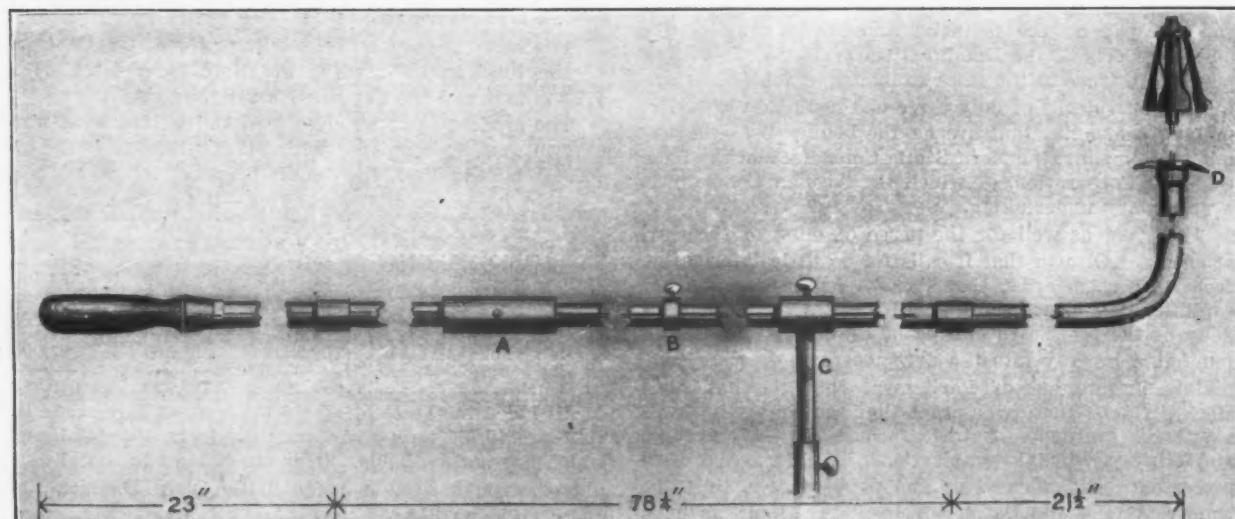


Fig. 1.—An Interrupted Compressed View of the Clark Boiler Flue Cleaner.

so that the reciprocating movement of the handle A cannot exceed this limit. The other end of the stroke of the handle is permanently limited by the head itself, which cannot pass the spider D on the top of the curved portion of the holder.

The operation of using the cleaner after the preparatory setting has been made and the cleaner head replaced, is to pass the head once or twice through the flue, and then by swinging the holder slightly in a horizontal plane to repeat the operation, causing the blades to pass over the strips of surface missed on the first operation because of the spaces between the blades. Aside from the rapidity and thoroughness of this method of cleaning (it is claimed to take only about 20 min. to clean the average upright boiler), the principal advantage is that it is not necessary to draw the fires, and it may even be possible to dispense with banking them.

Horizontal boilers can be as readily cleaned with an even simpler apparatus, based on the same principle. The head in such cases is simply attached to a $\frac{1}{2}$ -in. rod which is made in sections for convenience in transporting, and is pushed directly back and forth through the flues until they are free of incrusted material.

It is not the business of the Fred Clark Boiler Cleaning Company to sell these machines, but as its name

new branch was opened for business May 1, and is under the management of E. C. Rutherford of Toronto, who was for several years manager of the Magann Air Brake Company and of the Canadian Brake & Supply Company. A complete stock of thermit and appliances will at all times be carried at Toronto, and a fully equipped repair shop will be in operation.

A Simple Follow Up System.

The machine tool department of the Chandler & Farquhar Company, Boston, Mass., has developed a follow-up system which, while exceedingly simple in its details and operations, has proved to be wholly effective. A single form of card is required, shown herewith, together with a box and a quantity of clip tabs of different colors, one color for each salesman, including the manager of the department.

The essential feature of the card is the row of numerals along the upper edge, corresponding to the days of the month. Whenever an inquiry is received, or information obtained that a concern is in the market for machinery, or is interested with the possibility of buying later, one of these cards is filled out with the name and

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31						
NAME <i>Saco & Pette Inch. Shops</i>													DATE <i>4/6</i>												SALESMAN <i>P. J. Lynd</i>											
ADDRESS <i>Houston Upper Falls, Mass.</i>													INTERVIEWED <i>Mr. C. P. Brown, P. A.</i>																							
One R. H. 24" Hexagon Turret													\$250.00																							
One L. H. 24" " "													\$225.00																							
Delivery 4 weeks from receipt of order.																																				
CIRCULAR <i>✓</i>													4/14																							
LETTER <i>4/10</i>													4/20																							

Facsimile of Card Used by the Chandler & Farquhar Company, Boston, Mass., for Following Up Business Prospects.—Actual Size, 3 x 7 in.

implies, to clean boilers, and with them it has special facilities for doing such work. The company will, however, sell rights to use either of these machines in territory outside of New York and its vicinity.

Engineering courses, laboratory practice and research work will be given in the coming summer season of the University of Wisconsin, beginning June 22 and continuing six weeks. Departments are maintained in chemical, electrical, hydraulic and steam and gas engineering, in mechanical drawing, mechanics and testing of materials and in shop work. The last named includes pattern making, machine work, forging and treatment of carbon and high speed steels. In addition the eighth annual session of the Artisans' School will be held in the same period, instruction of more elementary type being given in most of the above subjects, adapted to students who have common school training or practical experience. Bulletins describing the courses of study may be obtained from F. E. Turneaure, dean of the College of Engineering, Madison, Wis.

The General Fireproofing Company, Youngstown, Ohio, has been awarded the contract for furnishing all the steel reinforcement for the new car house to be erected at 146th street and Lenox avenue, New York City, by the New York City Railway Company. The building will be of reinforced concrete, and will be 600 x 1000 ft. in size, four stories. Cars are to be stored on the first and second floors, and on the upper stories there will be work shops and offices. The building is to be completed in about four months.

The Goldschmidt Thermit Company, 90 West street, New York, announces the establishment of an office and works at 103 Richmond street, W., Toronto, Canada. The

address of the concern, the man interviewed, or to be seen or written to, and the name of the salesman handling the matter. There follows the list of machinery required and notes as to prices to quote, deliveries to promise, &c. In the blanks beside the words "Circular" and "Letter" are inserted the dates when each are to be sent out, and these serve as reminders to the clerk having charge of the index and to the salesman concerned.

The clerk files the slip in the box, which is arranged alphabetically by cities and towns, and he places the clip on the date when attention must next be given the matter. As an example of the use of the card the one illustrated was filled out April 6, and the clip was put over the date 10, at the top, to indicate that a letter is to be sent on that date. When this has been done the date at the bottom is checked, and the clip moved along to the date 14, when a circular is to be mailed, and so on.

Each day the clerk takes every card in the box tabled for that date and sorts them by the tab colors and places them in a basket on the manager's desk. By looking them over he keeps in touch with affairs, and may give directions as to the handling of certain matters. The cards are then distributed to the salesmen for their attention. Each card of a concern with which there is still prospect of doing business is put back in the box, tabbed for the next date to give it attention. As soon as a matter is closed the card is stamped "Remove card," and goes to a permanent index, where it serves as a part of a directory of customers, an all important record in a machinery establishment. Once a week all cards in the index are inspected by the manager and afterward by the salesmen.

The system is employed for other purposes than keeping track of prospective customers, being exceedingly useful in following up complaints from customers, such as failures to receive goods when promised, and the like.

The Westinghouse Mill Motor.

For driving auxiliary machinery in steel mills electric motors are particularly adaptable if they are designed for the conditions met with. They must be rugged, mechanically and electrically, capable of withstanding high temperature, proof against the entrance of dust and moisture, able to carry loads varying rapidly between wide limits, and to be frequently reversed, and above all must give uninterrupted service even though operated practically continuously. These requirements are fulfilled, it is claimed, by the mill type of direct current motor re-

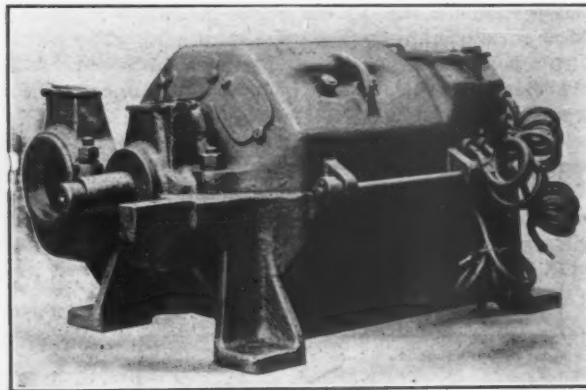


Fig. 1.—The New Mill Type Motor Made by the Westinghouse Electric & Mfg. Company.

cently produced by the Westinghouse Electric & Mfg. Company, Pittsburgh, Pa.

The general appearance of the motor is illustrated in Fig. 1, and Fig. 2 shows it opened, so that the armature may be inspected or removed. The motor frame is divided horizontally and the upper half is hinged to allow it to be swung back. The heavy section of the frame makes for rigidity and freedom from vibration. Hand holes in the frame permit inspecting the commutator and windings, but the tightly fitting covers exclude dust. The bearing housing is extended beyond the bearing, and is made dustproof by a steel washer and felt lining.

The shaft is large, and although the keyways are

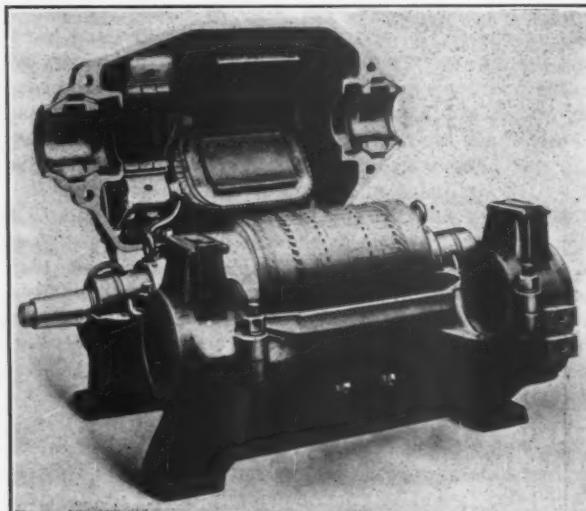


Fig. 2.—The Westinghouse Mill Motor with the Upper Half of the Frame Raised.

ample, there is little likelihood of its bending or breaking. The shaft extensions on both ends are tapered and of the same dimensions, consequently the hub bores of pinions and brake wheels can conform to one standard, so that they can be easily replaced. Large wearing surfaces in the bearings insure slow wear, and since the air gap between the fields and the armature is considerable, it would be a long time before the revolving and stationary parts could rub. Special provisions prevent oil from being drawn into the armature and from creeping along the shaft. The bearings are split and made interchangeable

for either end of the motor. Lugs cast with the bearings keep them from turning, making dowel pins unnecessary. An eyebolt on each bearing permits of ready handling of the armature.

The commutator and brushes have sectional areas permitting low current density, which tends to reduce heating. The commutator being mounted on the same spider as the armature laminations, the shaft may be readily removed. The carbon brush holder, Fig. 3, is substantial and so constructed that by removing one bolt the entire holder can be removed from the motor as one piece. The insulation is thoroughly protected from moisture and mechanical injury.

Throughout the insulation of the motors is of heat resisting character—asbestos, mica, porcelain or an insulating compound. The coils are treated with the compound and then baked at a temperature much above that created in normal service. The armature coils are of strap copper insulated with mica tape, hand wound. This form of coil can be easily repaired by the user, whereas wire wound coils are useless if the insulation becomes badly damaged. The coils are secured by hard fiber wedges and bands recessed in the surface of the laminations. The rear end of the armature has an end bell upon which the ends of the armature coils are banded.

Simplicity and accessibility of all parts for repair or

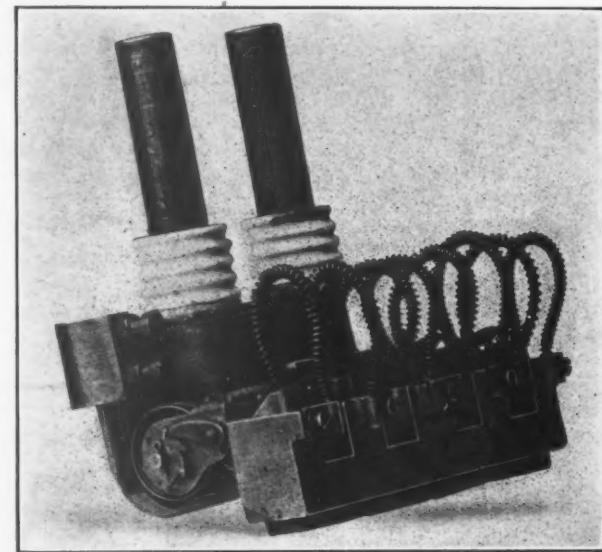


Fig. 3.—Brush Holder and Brushes of the Mill Type Motor.

removal are prime features of the motors, contributing to quick changes with little loss of time. This improved design of motor, it is stated, has been approved by steel mill engineers, and highly satisfactory results have followed from the use of the motors.

The Pennsylvania Railroad last week achieved the distinction of running a passenger train from Pittsburgh to Chicago in 7 hr. and 42 min. The special train used was made up of two 60-ft. baggage cars and two sleepers and carried a theatrical company. The distance covered was 468 miles, so that the average speed was a fraction under 61 miles an hour, including stops. It is said that never before has such a high average speed been maintained for so great a distance by a passenger train. In its remarkable flight the special overhauled the Pennsylvania 18-hr. New York-Chicago train, the fastest regular train it operates, and one of the two fastest long distance trains in the world. The run is said to have an important bearing on the company's future service. As soon as its tunnels under the North River and Manhattan Island are in operation, admitting its trains into the new New York depot, it is understood that the company will reduce the time of its fastest train to 16 hr. between New York and Chicago.

The Boston Belting Company, Boston, Mass., has been allowed by the Treasury Department the full 99 per cent. drawback on the duties paid on imported iron and steel rolls when exported in the form of rubber covered rollers.

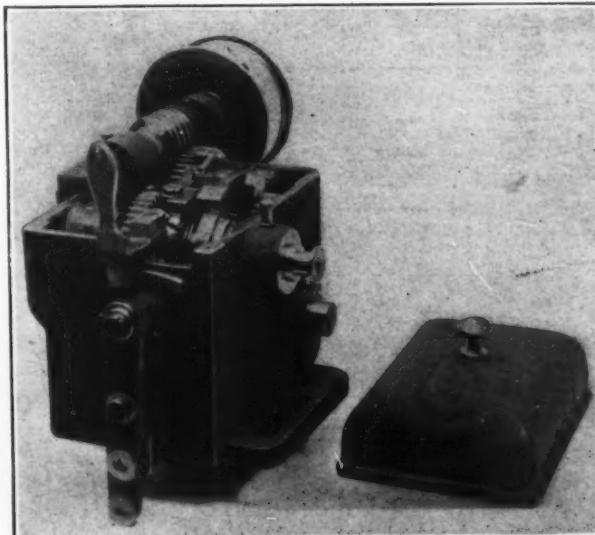
A German Automatic Indexing Mechanism for Milling Machines.

In the article, "German Machines and Tools," printed in *The Iron Age*, April 23, 1908, and abstracted from a communication in *Daily Consular and Trade Reports* from Special Agent Capt. Godfrey L. Carden, mention was made of an automatic indexing apparatus for universal milling machines made by the firm of Ludwig Loewe, Berlin. A later copy of the *Reports* contained an illustrated description of this device, from which the following is taken:

German machine tool makers have, in a number of instances, obtained work from American machines which was not contemplated by the original designers. Ludwig Loewe is making a specialty of an automatic indexing apparatus for universal milling machines. This is an attachment for standard millers, which, it is claimed, effects a saving of 50 per cent., if not more, in wages alone. Generally speaking, the dividing head in use at the present time on universal milling machines does not meet the modern demand for automatic action, as the actual division has to be done by hand. This often gives rise to mistakes which inevitably mean spoiled work. The workman must also stand idly by the machine to reverse the table and effect the next division. With the automatic indexing apparatus the universal milling machine is converted into an automatic gear cutter, without in any way affecting the utility of the machine as a universal milling tool. The part performed by the indexing apparatus is to automatically control the division, and also the change and return of the table. This permits of an operative attending to several machines at the same

from the countershaft, which necessitates disconnecting any existing feed driving arrangement. This means that the countershaft must be provided with a longer shaft to take an extra pulley. Ordinarily, the pulley on the indexing apparatus is run at 400 to 600 rev. per min. The width of this pulley is 6 in., which corresponds with that of the belt tightener rolls.

One of the accompanying illustrations shows the indexing apparatus as applied to a universal milling machine. The apparatus can be readily detached from the machine, as shown in the other engraving, in which the cover is removed to expose the mechanism, and is capable



The Automatic Indexing Attachment with Cover Removed.

of use with many of the well-known standard makes of millers.

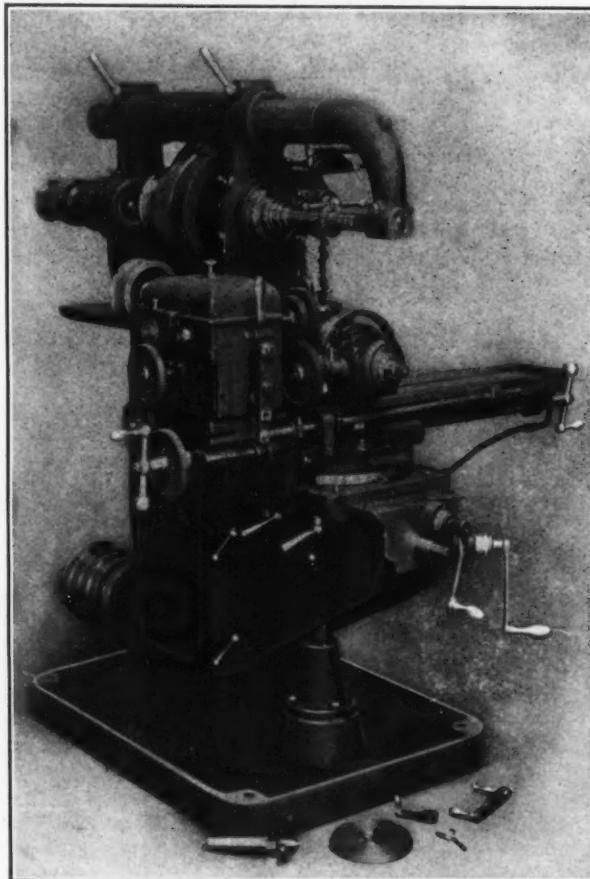
The automatic feed of the table with quick return is brought about by means of change gears which connect the apparatus with the table feed, and the ratio of these change gears determines the amount of feed per revolution of the work arbor. The return speed of the table is eight times that of the working speed. The travel of the table is regulated by adjustable dogs, which are attached to an adjustable horizontal bar, and strike against a fixed stop. The bar is connected to the reversing lever in such a manner that by changing the position of a screw, the direction of feed and return, respectively, can be reversed enabling either right or left hand cutters to be used. The automatic division takes place at the end of the returning motion. The driving gear of the train between the apparatus and the dividing head makes exactly one revolution each time.

Any division which is possible with the available change gears can be made. The ends of both spindles of the apparatus are detachable, so that they can be turned to suit the bore of the change gears.

The apparatus can only be used on a machine provided with a dividing head and change gears, and is intended for work which is not revolved while the cutter is in operation. The spindle of the dividing head can be arranged horizontally, vertically or tilted to any desired angle. The apparatus permits of adjusting to universal milling machines of various makes, provided the general dimensions are approximately the same as the machines made by Ludwig Loewe.

The apparatus is made in two sizes, one 9 1/4 in. long, and one 10 1/2 in. long, the latter being a heavier pattern and capable of heavier work. The writer understands that the tool is used on both the Becker-Brainard and Cincinnati types of milling machines, and when so applied the pulley of the apparatus is in front, while the reversing bar is on the back.

The first Japanese emigrants to Brazil, 783 in number, have just sailed for that country from Tokio. They will work on the Brazilian railroads. Brazil pays two-thirds of their passage money, and after six months will give each a grant of land to induce him to settle.



A Universal Milling Machine with the Automatic Indexing Mechanism Made by Ludwig Loewe, Berlin, Germany.

time, and it is on this basis of calculation that a saving of 50 per cent. is estimated. When not required the automatic attachment is removed from the machine.

In appearance the apparatus is like an inclosed gear box, which is attached to the table next to the dividing head. It is connected to this dividing head by a train of gears, while a further train on the opposite side operates the table feed. The apparatus is driven by a belt

Heating and Ventilating Storage Battery Rooms.

In connection with the electrification of the New York Central & Hudson River Railroad terminal at New York an interesting problem was heating and ventilating the storage battery stations at Lexington, Yonkers, Kingsbridge and Bronx Park. The storage batteries were guaranteed for 10 years, provided the temperature was

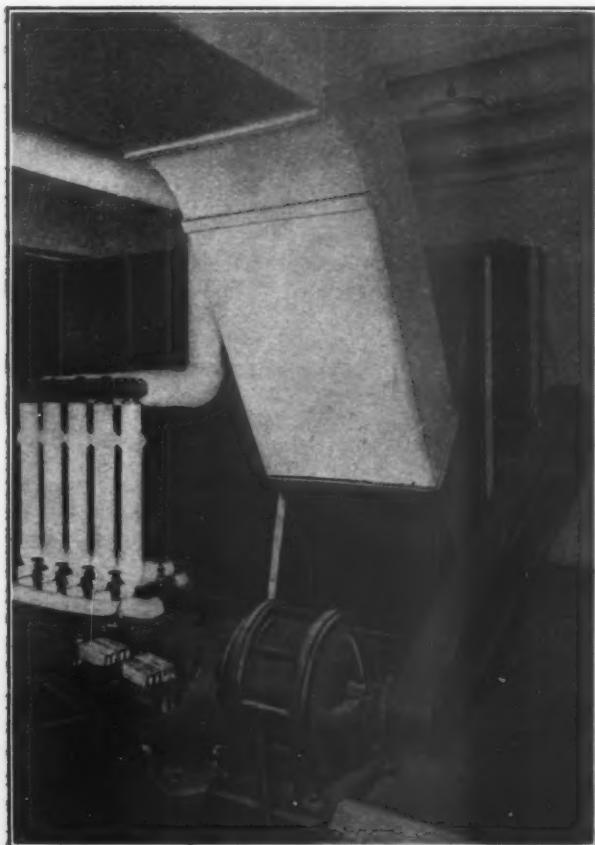


Fig. 1.—The Heating and Ventilating Equipment in the Yonkers Power House of the New York Central & Hudson River Railroad Company.

Hence a blower system was adopted and the entire heating plant is centralized in a detached building. The air is delivered to the various parts of the building through ducts, protected so as to resist the corrosive action of the acid fumes.

So far five of these stations have been equipped, including the power station at Yonkers, N. Y., which has its battery rooms, buss bar chambers, corridors, stair halls, controller chambers, &c., heated and ventilated by a blower system. The air is circulated through a sectional pipe heater by a steel plate fan which is driven by a belted motor as shown in Fig. 1. Steam is supplied to the heater by a small low pressure boiler, which is located in an adjacent room.

Two methods of distribution have been employed. In the Yonkers power station carefully protected galvanized iron ducts are used as shown in Fig. 2. In the substation battery rooms there is no piping, the air being admitted at one end through tile conduits terminating at registers made of 95 per cent. lead and 5 per cent. antimony.

The results have been equally as satisfactory by blowing in at one end of the battery rooms as when the air is distributed throughout the room by ducts with branches therefrom at frequent intervals. An advantage is the absence of the ducts on the ceiling, which, though they do not occupy space available for any other purpose, do not add to the appearance of the room, are costly to install and require frequent attention to keep them in a condition to resist the acid fumes.

The blower system is compact, easily accessible and under perfect control at all times, and is moderate in cost, easily installed and economical in operation and maintenance. Another feature is the flexibility, it being possible to deliver the air at any temperature without diminishing the volume, so that thorough ventilation is provided for the battery rooms while the batteries are being charged.

The heating and ventilating systems for these stations were designed by the American Blower Company, Detroit, Mich., and the apparatus was installed by John Hankin & Bro., heating contractors, New York City.

At a meeting of the directors of the New York Car Wheel Company held in Buffalo, N. Y., April 30, the resignations of W. G. Smith, Dr. Edwin Lodge and Herbert



Fig. 2.—The Battery Room in the Yonkers Power House, Showing the Air Distributing System.

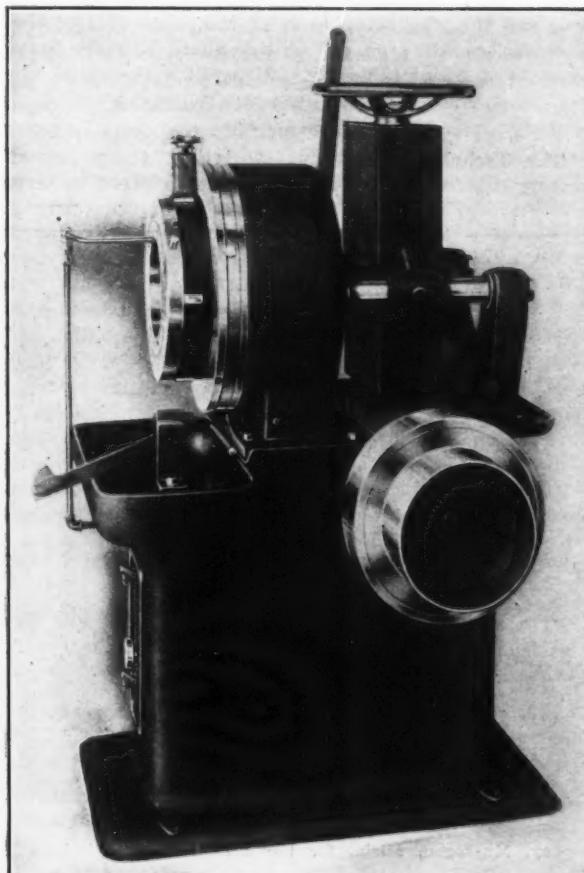
maintained at 70 degrees. This necessitated a heating plant for cold weather and a means of cooling in warm weather, as well as proper ventilation at all times.

The batteries emit acid fumes which precluded the possibility of heating by direct radiation, as the fumes would attack and destroy the radiators and pipe lines.

E. Boynton were accepted, and Frederick L. Colby, Oscar C. Shimmel and Herbert E. Payne were elected to serve in their stead. The new Board of Directors elected the following officers: Solomon Ginsburg, president; Bernard Ginsburg, vice-president; Edward W. Pendleton, secretary; James A. Venable, treasurer and general manager.

The 1908 Model Loew Victor Pipe Machine.

The Loew Victor pipe machines, made by the Loew Mfg. Company, Cleveland, Ohio, have been on the market for somewhat over two years, and in that time a number of both hand and power types have been added to the line. Of all these the principal features are the self-locking die head, which is designed on the principle of a universal chuck, and is free from wing nuts or other independent locking devices; the automatic die releasing attachment, which releases the dies after the thread is cut and removes the burrs from the thread at the same time, and the method of transmitting power through worm and worm wheel with ball thrust bearings, which insures a maximum amount of power and renders the machine noiseless in operation. All of the machines are now being equipped with cut-off attachments. These extend down through the solid part of the die head after



The Improved Loew Victor Pipe Threading and Cutting-off Machine Built by the Loew Mfg. Company, Cleveland, Ohio.

the manner of the dies. When the cut-off is in use the pipe is centered by an adjustable self-locking guide, similar to the self-locking feature of the die head, which obviates the necessity of using bushings.

One of the new styles just placed on the market is the 1908 model, an example of which is herewith illustrated. This machine is capable of cutting and threading pipe from $1\frac{1}{2}$ to 6 in. in diameter. The principle of operation is in general the same as that of other machines made by this company and described in *The Iron Age* March 29, 1906, and April 11, 1907, so that it need not be entered into again at this time. The machine is claimed to embody all of the advantages of previous designs and in addition to be more efficient and durable.

More fully stated, the important points of this new machine, in addition to those already mentioned as characteristic of the original line, are strong and substantial construction, with the weight distributed where most effective, absence of gearing on the outside of the machine, which improves the appearance and eliminates the danger to the operator, and a self-locking adjustable guide which holds the pipe rigidly. This machine is offered in competition with machines of the lathe-bed type. Being only about one-third the size of the usual lathe-bed

machine it is cheaper to manufacture, and it is claimed to do the same work.

A crank is furnished so that the machine can be operated by hand as well as by power. For power operation a 1-hp. motor is sufficient to drive the machine at full load. It may be mounted on the machine and preferably connected through a silent chain drive. The cast iron base contains a compartment for tools, dies, &c.

Above all else it was the object in the new machine to make it sufficiently strong and durable to withstand the same hard service which is expected of lathe bed machines. To this end the length of the base has been increased 8 in. and the diameter of the head and its bearing surface have also been increased. These enlargements and the new oil pan have added about 450 lb. to the weight of the machine.

Quietness in the British Iron Market.

Apart from foreign demand the British iron trade is very quiet. Stocks of pig iron in public stores continue to decrease, but the expectations of both buyers and sellers are indicated by the fact that for future delivery prices are from 1 to 2 shillings less than for early delivery. No. 3 Cleveland pig iron has sold recently at 51 shillings 6 pence for prompt delivery, while for June the price is 50 shillings 6 pence, and for the second half of the year 49 shillings 6 pence. Cleveland warrants can be had at about 3 shillings less for delivery three months ahead than for prompt. The stocks in Connal's stores, Middlesbrough, are smaller than in four years. On April 21 the stocks of No. 3 iron were 62,685 tons, a decrease since April 1 of 9967 tons. Export demand has apparently called for more than the current make available for that trade.

The situation in the shipbuilding trade is not encouraging, the amount of work on hand being small, and in addition there is little prospect that the strike at the shipyards will be settled at an early day. Many employees were locked out by the shipbuilding companies on May 2. At Barrow-in-Furness, a center of the hematite pig iron trade, the Barrow Company closed down its steel works last month because of the condition in the shipbuilding trade, and the prospect is that the plant may not be active again for six months. A steel plant in the Middlesbrough District may also be shut down for the same reason. While there is a fair demand for rails, the price has declined and the quotation of £5 15s. is now made.

British manufacturers of tubes recently participated in a conference at Düsseldorf, attended also by representatives of tube manufacturers in the United States and Germany. Some trouble had arisen over business in neutral markets. It is stated that a better understanding has now been arrived at relative to this trade, and that the agreement is still maintained. A movement is on foot to organize a number of the smaller tube manufacturers in Scotland into one large company with a capitalization of over £3,000,000.

The Pittsburgh Foundrymen's Association.—The regular monthly meeting of this association was held in the Hotel Henry, Pittsburgh, on the evening of May 4, the business session being preceded by a dinner. Dr. Richard Moldenke, secretary of the American Foundrymen's Association, and E. H. Mumford, president of the Foundrymen's Supply Association, were present and gave the members considerable information relative to the coming convention of the American Foundrymen's Association, to be held in Toronto, Canada, in June. The paper of the evening was on the subject of "Core Binders," and was presented by E. D. Frohman, Pittsburgh representative of the S. Obermayer Company of Cincinnati, Ohio.

We are officially advised that the report that the National Tube Company, Pittsburgh, would erect another blast furnace at its National Department, McKeesport, Pa., is untrue. This company has four blast furnaces at McKeesport, but has no present intention of increasing the number.

A Shaw 100-Ton Wrecking Crane.

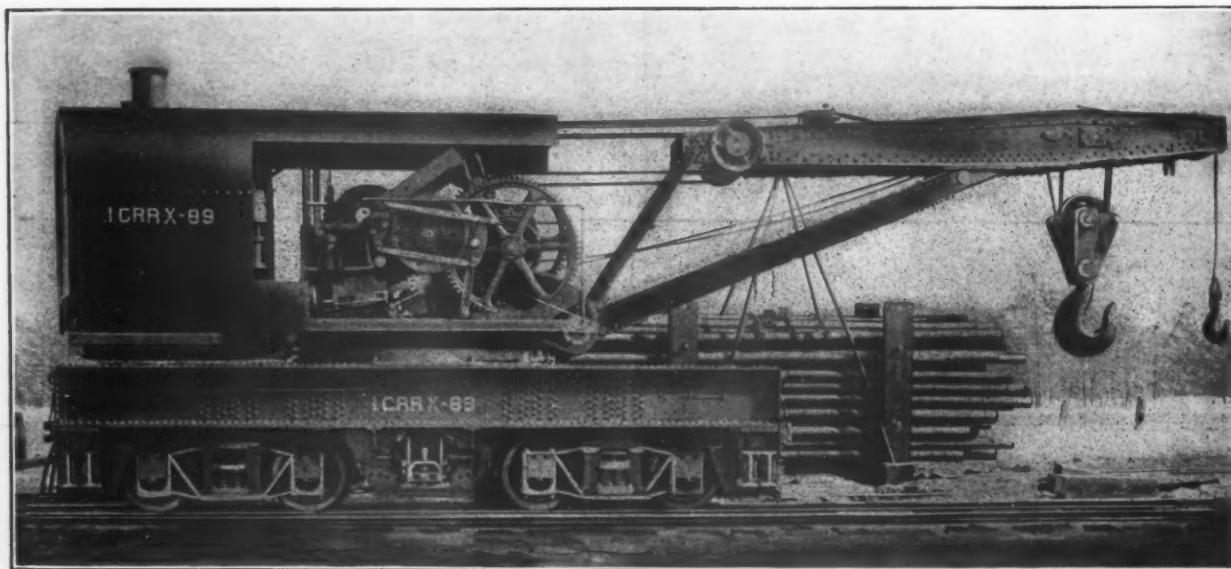
A new railroad wrecking crane recently built by the Shaw Electric Crane Company, Muskegon, Mich., for the Illinois Central Railroad Company, is shown in the accompanying engraving. While it is in the main similar to the standard types, it is claimed to have distinctive advantages by virtue of the disposition of its parts. For example, an important feature, and one which gave rise to several improvements over former practice, is the placing of the engines in the reverse of the usual position, the cylinders being well back toward the rear, instead of toward the front of the crane. This position of the engine makes it possible to put the side frames farther apart and keep the machinery low, resulting in a lower center of gravity and giving the engineer a good view of the work without placing him in a dangerous position. It also allows short direct piping, isolated from the machinery and out of the way of the engineer's head.

The steam pipe branches at the throttle and extends down to the engine cylinders at each side just in front of the coal bin and water tank. The exhaust pipes pass underneath and up to a separator on the back of the boiler, from which the exhaust steam escapes through tubes inside of the boiler to the stack. The pipes thus located are entirely out of the way, and are not sub-

one axle of each truck, but this gearing in no way interferes with the free movement of the trucks when the crane is hauled by a locomotive. A friction drive is provided in the gearing to each truck, so that any inequality in the diameters of the driving wheels is taken care of. Self-lubricating center and side bearings make the crane superior to most rolling stock for taking sharp curves. These avoid the danger of derailing, which is inseparable from the use of rigid pedestals carried by the car body, sometimes used on self-propelling cranes. As the car is driven from both tracks, it will drive equally well with the load suspended at either end.

The crane has a complete air brake equipment, both automatic and straight air. By means of permanent pipe connections from the crane to the car, the straight air system affords means of complete control by the crane operator. The crane is principally of steel, very little cast iron entering into the construction. All requirements of such a machine have been considered in the design, and the workmanship is of the same quality that characterizes all products of the Shaw Electric Crane Company, for which Manning, Maxwell & Moore, 85 Liberty street, New York City, are sole selling agents.

The Technical Publicity Association, at its annual meeting April 30, elected the following officers to serve



A 100-Ton Wrecking Crane Built by the Shaw Electric Crane Company, Muskegon, Mich., for the Illinois Central Railroad Company.

jected to strains by any shocks that may cause deflection or vibration of the part of the frame carrying the boiler.

Another improvement is the use of steam to supply the main and auxiliary hoist brakes in addition to the usual hand applying mechanism. The auxiliary hoist is unusually powerful, having a capacity of 20 tons on a single line and 40 tons by the use of one sheave block. The main and auxiliary hoist parts are interchangeable, including clutches, all brake parts, gears, shafts, drums and ropes.

The jib is a departure from customary forms. The new design avoids the combined bending and compression strains of the old type, and gives a lighter and stiffer structure, adding to the safety and stability of the crane. An unobstructed passage for the engineer to and from the cab has been provided on both sides of the machine.

The engines have an improved Walschaert valve gear, which gives smooth action at all speeds and is easily reversed under load. Important features of the steam generating outfit are: forced draft, telescoping stack, shaking and dumping grates and dumping ash pan. The boiler has good reserve capacity and a special arrangement of the tubes permits easy cleaning of the crown sheet. A dry pipe is provided and every precaution taken to secure dry steam under all conditions.

The crane is self-propelling through gears driving to

during the ensuing year: President, C. S. Redfield, advertising manager Yale & Towne Mfg. Company, New York; first vice-president, Rodman Gilder, publicity manager Crocker-Wheeler Company, Ampere, N. J.; second vice-president, C. N. Manfred, manager advertising department H. W. Johns-Manville Company, New York; secretary, H. H. Kress, publicity department A. S. Cameron Steam Pump Works, New York; treasurer, H. M. Davis, advertising manager Sprague Electric Company, New York. Members of Executive Committee: F. H. Gale, in charge of advertising General Electric Company, Schenectady, N. Y., and C. W. Beaver, special representative Yale & Towne Mfg. Company, New York. Twenty new members have joined the association since the last annual meeting.

R. Daae & Co., House Building, Pittsburgh, Pa., have been selected engineers for the United States Metal Recovery Company's new plant at Frisco, Pa. This plant, which is now being erected, is for the purpose of extracting rare metals from the crude ore.

England is beginning to build skyscrapers. The corporation of the city of Liverpool has authorized the construction of an office building 300 ft. high, opposite the Prince's landing stage on the bank of the Mersey.

Labor Measures in Congress.

The-Eight Hour Bill Postponed But Anti-Injunction Bill May Pass.

WASHINGTON, D. C., May 5, 1908.—The developments of the past week in connection with pending pro-labor legislation have been of unusual interest. On the one hand, the movement to secure the passage of a Federal eight-hour law applying to private establishments has received a serious check, while on the other distinct progress has been made in the campaign having for its objects the curtailment of the power of the courts to issue injunctions in labor disputes and the amendment of the Sherman Anti-Trust law so as to exempt labor organizations from its provisions.

The Eight Hour Bill.

The House Committee on Labor, before which the so-called Gardner-Gompers eight-hour bill has been pending since the holiday recess, has finally disposed of the measure for the present session by referring it to a special sub-committee, with instructions to make a thorough investigation as to the constitutionality of its provisions. This sub-committee will probably not report until Congress meets again next December. When the bill was first taken up for hearings it was referred to a sub-committee of five members, two of whom were known to favor it, while two were believed to be opposed to it, Chairman Gardner, the fifth member, holding the balance of power. Upon the conclusion of the hearings accorded to the manufacturers and employers, a number of attorneys presented arguments in which the question of the constitutionality of the proposed law was raised with such effectiveness that the sub-committee decided to report the bill to the full committee without recommendation, but with the suggestion that its constitutionality should receive further consideration. This suggestion was adopted by the full committee, and Chairman Gardner thereupon appointed Messrs. Haskins of Vermont, Norris of Nebraska and Rainey of Illinois, all of whom are lawyers, with instructions to decide the question as to whether any feature of the measure is repugnant to the Constitution. The friends of the bill offered a motion that the sub-committee be instructed to report in a week, but this motion was lost, a fate which also befell a second motion directing a report within a fortnight. In view of this action the sub-committee stands without instructions as to the date of its report and its members have no present intention of attempting to decide before the end of the present session the important question delegated to it. The Congressional leaders are planning to adjourn for the summer recess on or about May 15.

Amendments to Naval Bill Rejected.

Unsuccessful attempts to force an 8-hr. provision into all contracts for warships and naval supplies were made in both Houses during the recent consideration of the annual naval appropriation bill. Mr. Hughes of New Jersey, a minority member of the House Labor Committee, offered the following amendment to the provision of the bill relating to the proposed increase of the navy:

That none of the amount herein appropriated for such construction shall be expended where any laborer or mechanic doing any part of the work contemplated by the contract, in the employ of the contractor or any subcontractor contracting for any part of said work contemplated, shall be required or permitted to work more than eight hours in any one calendar day upon such work, except upon permission granted by the Secretary of the Navy during time of war or a time where war is imminent, or where any great national emergency exists; and provided further, that the contractor contracting with the United States shall, in the event of the violation of said covenant as to hours of labor, forfeit to the United States the sum of \$5 for each laborer or mechanic for every calendar day for which he shall have been required or permitted to labor more than eight hours upon the work under such contract.

Chairman Foss of the House Naval Committee made the point of order against this amendment that it would change existing law and was therefore "new legislation," which, under the rules of the House, cannot be added to an appropriation bill except by unanimous consent. Mr. Hughes contended that his amendment merely operated as a limitation on an appropriation, but the

chair sustained the point of order on the ground that the amendment clearly operated to modify the general laws under which naval construction is now carried on.

When the bill reached the Senate Mr. Culberson of Texas offered a duplicate of the Hughes amendment, but again it was ruled out. No further opportunity is likely to be presented for the consideration of any similar proposition.

The Anti-Injunction Bills.

The revival of interest in the proposition to limit the power of the courts to grant injunctions in labor disputes and to exempt labor unions from the operation of the Sherman Anti-Trust law is due to the special message forwarded to Congress on April 27 by the President. Immediately thereafter several new anti-injunction bills were submitted, the most significant of which was introduced by Mr. Payne of New York, chairman of the Ways and Means Committee and the majority floor leader. Mr. Payne's bill provides that "no preliminary injunction or restraining order shall be granted by any judge or court without notice to the party sought to be enjoined or restrained, unless it shall appear to the satisfaction of the court or judge to whom application for injunction or restraining order is made that the immediate issue of such injunction or restraining order is necessary to prevent irreparable damage." The measure also stipulates that "any such injunction or restraining order shall contain a rule on the opposite party to show cause within five days why such injunction or restraining order shall not be continued." This bill is said to have been modeled upon the rules of the State courts of Pennsylvania and is offered by Mr. Payne as a compromise measure. It is undoubtedly the most conservative of the bills heretofore presented in either House, and it is understood that it will be supported by the President if the labor leaders are willing to accept it as a compromise. Speaker Cannon, who has stoutly opposed the passage of any measure that would materially restrict the power of the courts in this regard, has intimated his willingness to permit the Payne bill to go through. There is much opposition to the measure in the House, however, and many experienced lawyers in that body declare that the power of the courts in the matter of issuing injunctions is inherent and absolute, and that any measure restricting their authority will be held to be unconstitutional by the United States Supreme Court.

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To Amend the Sherman Law.

Extraordinary efforts are being made by the administration to force through at the present session the bill drafted by the National Civic Federation providing for the amendment of the Sherman Antitrust law, which was recently introduced in the House by Mr. Hepburn of Iowa, chairman of the Committee on Interstate and Foreign Commerce. A duplicate of this bill was presented in the Senate by Mr. Warner of Missouri, and the two measures are now pending before the House and Senate Judiciary committees, respectively. Hearings have been held upon these bills, but the leading members of both committees have expressed the opinion that the bill is crude and contains many unwise provisions. The subject is so important that it is not regarded as practicable to frame and pass a satisfactory law before the summer recess. Notwithstanding these views, however, the President is making a systematic campaign to secure the amendment of the Sherman act before the recess, and it is among the possibilities that legislation of some kind will be enacted at this session. Several bills containing but a single section exempting labor organizations and farmers from the operation of the Sherman act have been brought forward, and an attempt is being made to secure a compromise on one of these bills. The best lawyers in both houses take the position, however, that any such exemption would be unconstitutional.

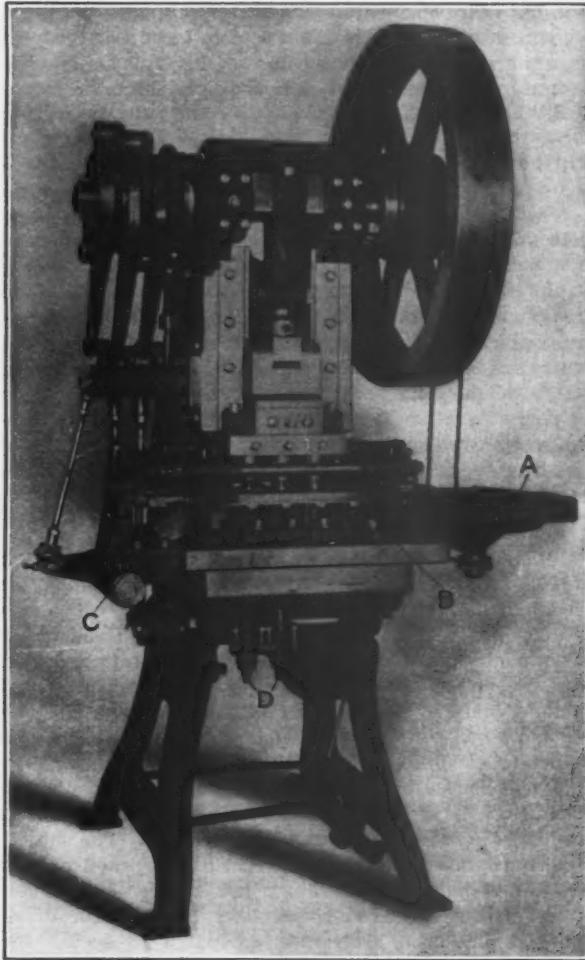
W. L. C.

The district office maintained by the Allis-Chalmers Company at San Francisco, with H. D. Scribner, manager, has been removed from the Atlas Building to the Phillips Building, which is near by, at 599 Mission street.

A Special Bliss Automatic Gang Press.

For a wide range of small articles from sheet brass, tin, copper and aluminum, a new special automatic press, shown in the accompanying illustration, has recently been built by the E. W. Bliss Company, 11 Adams street, Brooklyn, N. Y. It has three sets of punches and dies for performing successive operations on shells previously cut and partly formed in another press. The three sets act simultaneously on different pieces of work, so that a completed piece is discharged at each stroke.

The operation of the machine is entirely automatic. The drawn shells on which the die operations are to be performed are laid on the revolving friction dial A, right side up. This continually revolving dial is driven by a round belt from a groove in the hub of the flywheel and carries the shells up to a stop from which they are automatically released, one at a time, and gripped by the lateral feed B. This places the shell in position under the first operation die, after which operation it carries the shell from this through the subsequent operations, finally discharging it into the chute C, from which it falls into a receptacle placed to receive the finished articles. After the first three revolutions a finished blank is produced at each revolution of the press. The lateral feed is operated by cams on the end of the crank shaft through the me-



A Special Triple Operation Press Built by the E. W. Bliss Company, Brooklyn, N. Y.

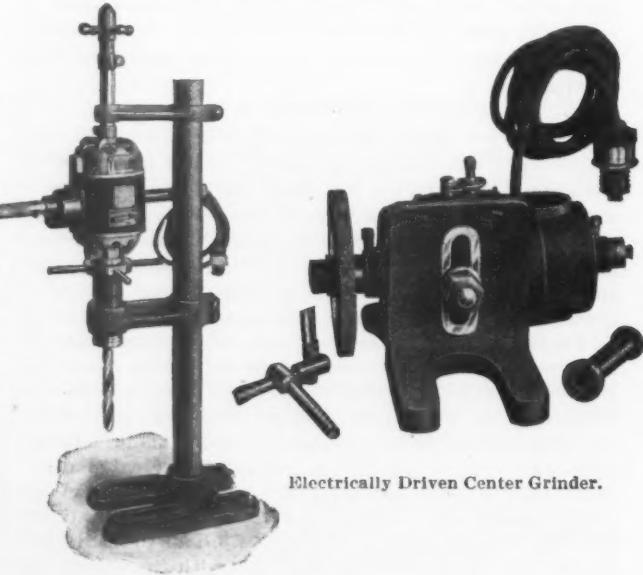
dium of connecting levers and cranks shown on the side of the press. The positive knockouts D for the dies are operated in the same manner.

The main slide is adjustable, allowing the use of dies for a variety of articles and providing for different heights of dies, as well as allowing for the wear on them. The lateral feed is adjustable in every way. An important feature not to be overlooked is the fact that at no time is it necessary for the operator to have his hands near the dies, thus doing away with all possible danger of accident to the operator.

The press runs at the rate of 75 to 100 strokes per minute, depending on the size and shape of the shell on which the operations are to be done, performing from 225 to 300 operations per minute. Since it entirely eliminates handling between operations it is claimed to be economical of time, labor and shop room.

Two New U. S. Electric Tools.

Two new products of the United States Electrical Tool Company, Cincinnati, Ohio, are presented in the ac-



Electrically Driven Center Grinder.

Stand and Electric Drill.

Two New Products of the United States Electrical Tool Company, Cincinnati, Ohio.

companying illustrations. One is in a measure a combination tool, being an electric drill that can be held either in the hands or in the standard. In either sense it is portable, since it can be carried to the work and applied in any position. The other tool is a center grinder primarily, but may be used anywhere that a mounting is afforded for the supporting angle plate.

The drill is capable of drilling holes up to $1\frac{1}{4}$ in. in diameter in steel, and has a positive feed of 3 in. extent. The idea of its combination with an adjustable stand with slotted feet for clamping bolts is to save the time of rigging up an "old man," and it is also more convenient since it supports the drill so that it cannot slip when starting the hole nor fall out of position when the hole pierces the work. The drill can be taken out of the stand and used as a portable electric drill, and is operated from an ordinary incandescent lamp socket on a current of 110 or 220 volts. The motor is of the air-cooled type.

Some special advantages are claimed for the center grinder. It is made with an angle plate which straddles the tool post of the lathe, and this angle plate is tightened by a simple manipulation of the tool in the tool post. This method of holding the motor makes the grinder very rigid and there is not the vibration that occurs when the motor is attached to a shank held in the tool post. The grinder can be raised and lowered on the angle plate to bring it in line with the centers and can be set at any angle. The bearings are adjustable for wear and are dust proof. The motor in this case also is of the air-cooled type.

M. Braudy & Sons, Grand Rapids, Mich., dealers in scrap iron and mill supplies, have purchased a 13-acre site on the line of the Pere Marquette Railroad at Detroit, and will construct warehouses and yards thereon at a cost of between \$75,000 and \$100,000. This branch of the business will be in charge of M. Braudy, while the original business at Grand Rapids will be continued by Samuel and Louis Braudy, junior members of the firm.

When Are Freight Claims Outlawed?

BY R. L. ARDREY.

Confusion appears to prevail in the minds of shippers and railroad claim agents regarding the time when claims for overcharges are barred or outlawed under the Hepburn law. Many shippers who have had correspondence with the Interstate Commerce Commission have understood that a claim must be filed with the commission within two years from the date of delivery of the shipment; that if not filed within this time it becomes invalid and the railroad cannot legally pay it, even though it may be willing to settle.

The average shipper, especially in the iron trade, has a large number of claims, often involving considerable amounts, which have been pending unsettled for more than two years. The shipper has been reasonably diligent in pressing these claims, but the railroad claim agent has found so many excuses for delay and further investigation that it may require several years more of persistent effort by the former to recover what is justly due him. It has not been uncommon in the past for claims to be paid after four or five years of correspondence, and there have been cases where shippers have brought suit and recovered claims after waiting with patience for eight or 10 years. State laws allow all the way from five to 10 years or more, under the statutes of limitation, before an account of this nature becomes barred or outlawed.

Section 16 of the Interstate Commerce law, as amended by the Hepburn act, reads as follows:

All complaints for the recovery of damages shall be filed with the commission within two years from the time the cause of action accrues, and not after, and a petition for the enforcement of an order for the payment of money shall be filed in the Circuit Court within one year from the date of the order, and not after; provided, that claims accrued prior to the passage of this act may be presented within one year.

The Interstate Commerce Commission has held that old claims, which accrued prior to the passage of the Hepburn law, should have been filed prior to August 28, 1907, one year after the law went into effect. In Tariff Circular 15 A, Rule 81, the commission says:

Claims filed since August 28, 1907, must have accrued within two years immediately prior to the date upon which they are filed; otherwise they are barred by the statute. Claims filed with the commission on or before August 28, 1907, are not affected by the two years' limitation in the act. The commission will not take jurisdiction over any claim for reparation or damages which is barred by the statute of limitation, as herein interpreted, and the commission will not recognize the right of a carrier to waive the limitation provisions of the statute.

Loss and Damage Claims Not Affected.

The claim agents of some of the roads are making very profitable use of this rule of the commission. While there are some claim agents who try fairly to get at the facts, and who pay promptly when they get the evidence to justify payment, there are others who act upon the theory that their duty is to evade the shipper as long as possible, even on a claim they know to be just, and they are making such free use of Rule 81 that they even quote it on loss and damage claims.

The commission, however, only has authority over claims relating to "rates, fares and charges," and it has declined to receive or consider claims from shippers for loss or damage. The rule above quoted, therefore, refers only to claims for reparation where unjust or unreasonable rates have been collected. The term "damages" in the law is used in the legal sense, to denote money recovered. The laws of the States fix the time when claims for loss or damage to property in transit become outlawed.

The paragraph which has been quoted from Rule 81 of Tariff Circular 15 A is entitled "Statute of Limitation," and it conveys to the ordinary layman or shipper the impression that an overcharge claim is outlawed after two years; and it then becomes an unlawful act for the railroad to pay it. This would be a remarkable provision of law. In the ordinary course of the business of railroad claim departments, a large proportion of claims are not paid within two years, and scarcely one shipper in a thousand has known how to prepare the papers for fil-

ing a claim with the commission without employing an attorney, so that, by the act of bringing proceedings before the commission, the claim might be kept alive. The railroad which does not want to pay claims would only need to delay the shipper for two years, by one pretext or another, when it could plead that the law did not permit it to pay after two years.

Overcharge Claims Not Outlawed.

Lawyers seem to understand Rule 81, and it is unfortunate that the language used is not clear to the layman. The rule is not a "statute of limitation" in the ordinary sense of the term, and it does not make a claim invalid after two years, nor make it a crime for a railroad to pay a claim more than two years old. It merely limits the "jurisdiction" of the commission, without affecting the validity of a claim, or the right of the shipper to collect it by other means than through the commission, after the two years have expired. Section 22 of the Interstate Commerce act expressly says: "Nothing in this act contained shall in any way abridge or alter the remedies now existing at common law or by statute, but the provisions of this act are in addition to such remedies."

Advantages of Filing Claims with the Commission.

Congress has created, in the Interstate Commerce Commission, the most "business like" tribunal in the world. When a business man brings suit in court he must pay costs, employ an attorney, obtain personal service on the defendant through a court officer and comply with all the ancient forms of court procedure. Ordinary business documents are not accepted by a court as evidence until they have been identified and proved by living witnesses, under oath, and at every step tedious formalities must be complied with under penalty of losing the case on a technicality. Good lawyers always advise a business man to keep out of court.

This advice, however, should not apply to the Interstate Commerce Commission. It is a very simple matter to submit an "informal" complaint. It is not necessary for the commission to give a public, formal hearing unless the shipper or the railroad demands it, and the shipper does not need an attorney. The greater number of the complaints brought to the attention of the commission are considered informally, by the consent of the parties interested, and this makes the proceeding as simple as an ordinary case of arbitration before a committee of business men or an old time proceeding before a guild committee under the law merchant. The shipper submits his papers and facts just as he would submit them to the railroad claim agent, and the commission is able to handle an enormous amount of business in this informal manner without any red tape or expense to the shipper.

A circular which any shipper can obtain explains how to present a claim to the commission, and an informal complaint is so easily presented by correspondence that it might be a useful precaution for shippers to watch their claim files, and present claims to the commission when they are nearing the age of two years, merely to keep them within the jurisdiction of the commission, so as to take advantage of this simple procedure in case it becomes necessary.

A Doubt About Old Claims.

The Hepburn law has not been in effect two years, so there is no difficulty about presenting complaints of overcharges since August 28, 1906. The commission, however, is declining to receive complaints regarding shipments prior to the passage of the law. It may be that in these cases the shippers who are disappointed have been barking up the wrong tree. Sections 15, 16 and 16a of the law, in connection with which the so-called "statute of limitation" appears in section 16, seem to deal entirely with the power of the commission to change a published tariff rate, and to give the shipper reparation or damages where it is found that a rate is unjust or unreasonable. Congress has provided that where the commission makes a new rate, after a complaint and hearing, its orders shall be limited to two years. It would be reasonable to provide in this connection that the commission should not have the power to go back farther than two years in requiring reparation by the carrier where a regularly published rate is condemned.

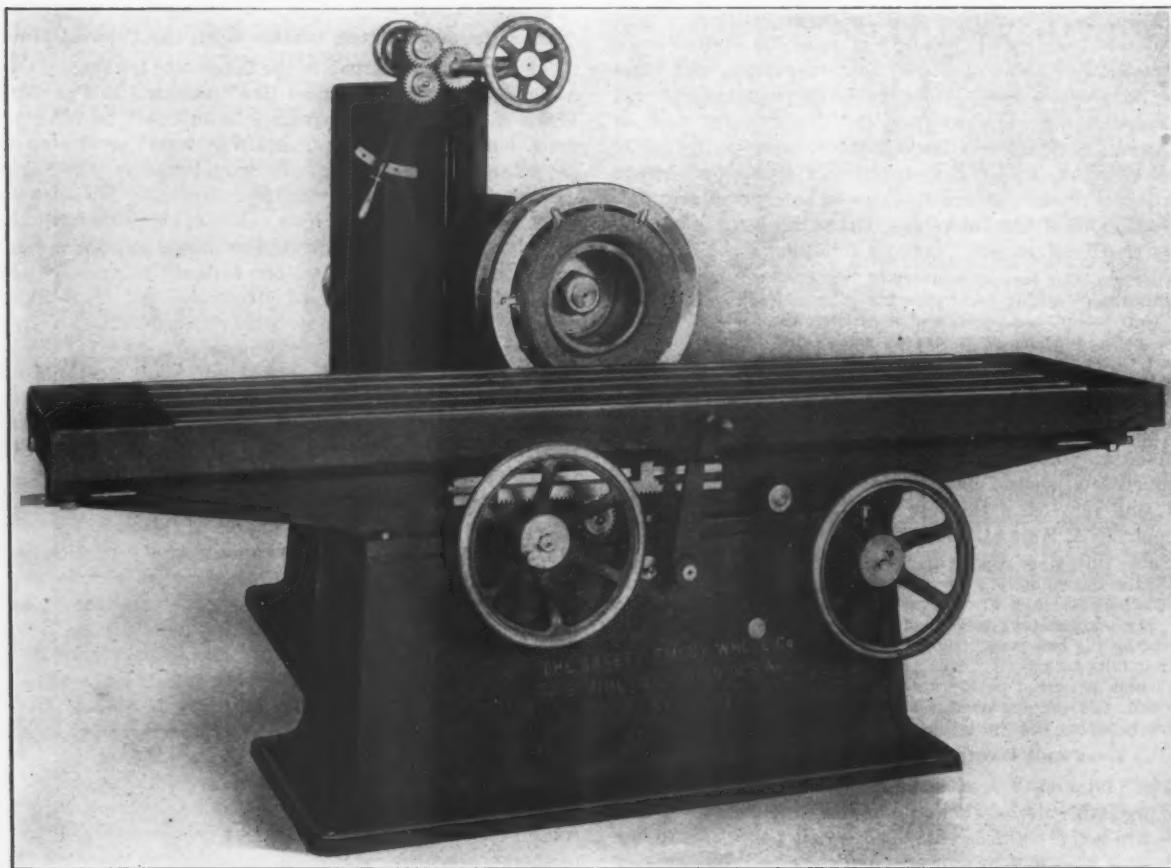
Practically all of the overcharge claims which shippers hold against the railroads are for money paid in excess of the regular and lawfully published tariff rates, or what the shipper understands to be the lawful rates. This is an entirely different proposition. The law makes it a criminal offense to overcharge the shipper, an offense that is not outlawed for three years. It would be a remarkable application of law to bar the injured party in two years from recovering his money, when the criminal offense is not barred for three years. Very few members of Congress are shippers, and the more reasonable view of the matter, from the standpoint of a layman, is that Congress knew nothing about what the shipper calls "overcharges," and intended only to limit the retroactive effect of the rate making power which was given to the commission.

The total of the capitalization and current liabilities of the directly operating street railroad companies in Pennsylvania in 1907 was \$240,224,061, an increase of \$56,570,620 over 1906. To this must be added \$224,329,

An Automatic Ring Wheel Edge Grinder.

For grinding from the rough the flat edges and surfaces of iron, steel and brass shapes, the Safety Emery Wheel Company, Springfield, Ohio, has recently perfected an automatic grinder, two views of which are shown in the accompanying illustrations. The need of economical production along these lines was the motive which prompted its design. Grinding is often the most rapid as well as the cheapest method for removing material. Not only is it possible to remove the rough stock, but a finer finish can be obtained than by any other method. In many instances a grinder replaces, to advantage, a planer, milling machine or shaper.

The grinder is of heavy and rigid construction throughout, and is entirely automatic in its operation. The base is a single casting, and extends back for the upright support of the wheel head. An extra long bed supports the carriage, which travels in one flat and one V way. The carriage is provided with a table or platen with T-slots to which the work can be clamped with suit-



The New Automatic Ring Wheel Edge Grinder Built by the Safety Emery Wheel Company, Springfield, Ohio.

\$81 of capital stock and debt of companies leased and operated by other companies, making the total capitalization of street railroads in Pennsylvania \$464,553,942.

The statement of the Pittsburgh Coal Company for the first quarter of the year makes the following comparisons, which reflect the unsatisfactory condition of general business:

	Tonnage.		
Coal—	1908.	1907.	Decrease.
Pittsburgh District.....	2,704,873	3,637,163	932,290
Hocking District (Ohio).....	205,590	219,715	14,116
Totals.....	2,910,472	3,856,878	946,406
Coke—			
Pittsburgh District.....	2,648	113,796	111,148
	Earnings.		
Gross earnings.....	\$515,992.48	\$1,025,429.54	\$509,537.06
Allowance for depletion of coal lands.....	120,214.04	459,899.05	39,655.01
Allowance for depreciation of plant and equipment	257,837.27	255,236.52	*2,600.75
Accrued interest, first mortgage bonds.....	263,300.00	282,964.17	19,664.17
Net loss.....	125,388.83	327,329.80	542,718.63
Net earnings.....			

* Increase.

able jigs or fixtures. The carriage is triple back geared; all gears and racks are cut from the solid.

The grinding wheel is of the ring or cylinder shape, and is held firmly in the company's patent safety chuck, which permits without danger the high speeds so essential to fast cutting. A full line of wheels is also manufactured by the company. The wheel spindle is supported in heavy bracket bearings, which in turn are fastened to the sliding head on the upright. Thrust bearings are provided and means for taking up end play. The vertical adjustment of the wheel is 12 in., and is operated by hand or power feed as desired.

The wheel head and the upright slide on gibbed ways; the wheel is fed to or from the work by a large feed screw operated automatically by dogs at the extremes of the carriage travel. The dogs, as shown in the front view at each end of the carriage or table, are threaded pins providing fine adjustment. At the extremes of travel these dogs operate on a sliding rack, which in turn is connected through a train of gears to a gear and ratchet plate sleeve on the feed screw. This ratchet plate is directly behind the large hand wheel at the left. The hand wheel is secured to the feed screw and acts as a driver when feed-

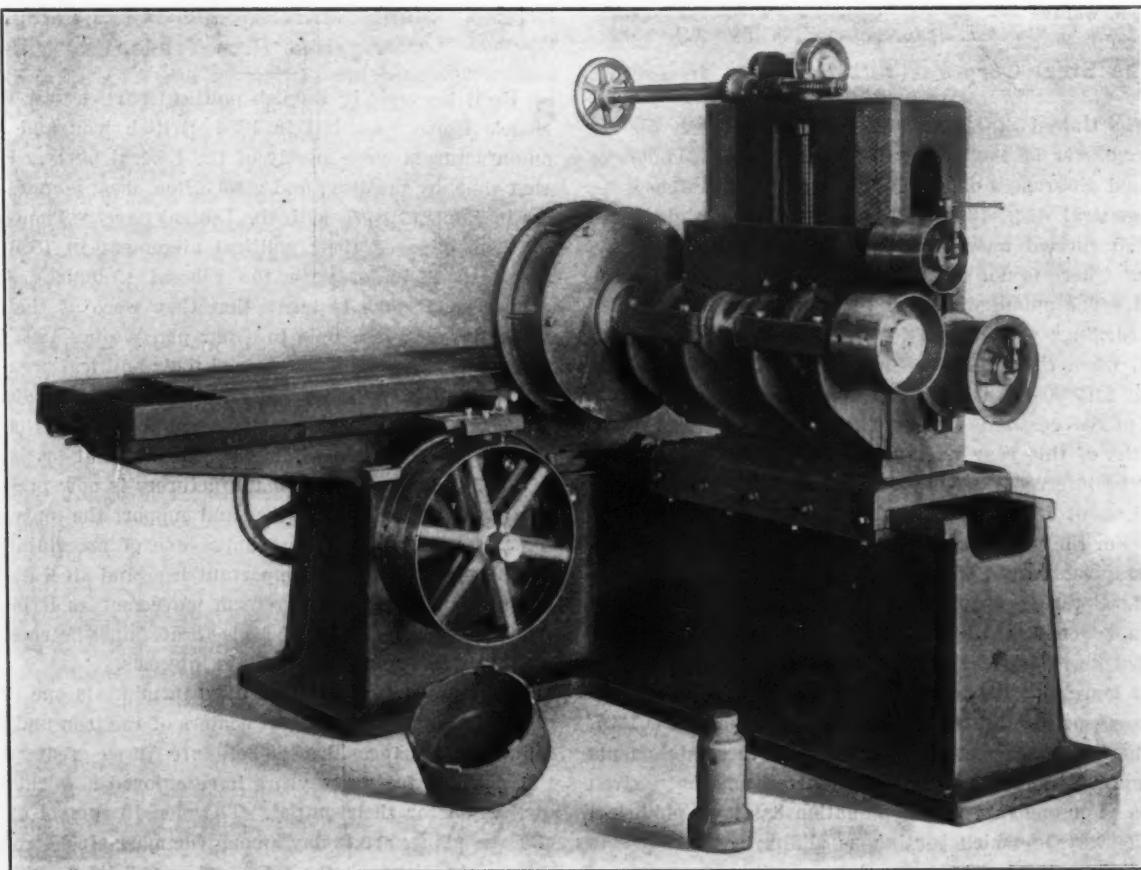
ing automatically by the engagement of a pin located on the hub; when feeding by hand this pin is disengaged. By properly adjusting the dogs, any desired feed from 1-1000 to $\frac{1}{8}$ in. may be secured. All ways are hand scraped to proof staffs to insure accuracy.

The motion of the carriage is under the complete control of the operator, and can be stopped at any desired point by throwing the reverse lever to its central or neutral position, or can be run back and forth by operating the lever by hand, or by means of the large hand wheel at the front. Reversal of the carriage or table is accomplished by the action of the solid dogs on the reverse lever, as shown projecting up toward the surface of the table. This lever is connected by a link and crank mechanism through the base to a cam plate in the rear, directly above the driving pulleys. The table is driven by a rack, which is triple back geared to the center driving pulley. The cam plate operates belt loops which guide the belts, one straight and one cross belt, from the coun-

company's Chicago office was removed May 1 to suite 508, Fisher Building, corner Dearborn and Van Buren streets, one block north of its old location at 321 Dearborn street.

Scrap Classification to Be Standardized.

At a meeting of the Railroad Storekeepers' Association, to be held in Chicago, May 25, the question of unifying the different scrap classifications of the various Western railroads will be taken up with a view to securing an agreement upon a single classification, which shall be adopted as a standard by all lines. To this end a compilation of the several classifications used by nine of the leading Western roads has been prepared in which the individual classification of each road is shown. This has been submitted to the principal scrap dealers, whose suggestions as to the preferable grouping of material are invited. Considering the unlimited opportunity for mis-



Rear View, Showing the Drive of the Automatic Ring Wheel Grinder.

tershaft, the same as on a planer. All the operating mechanism is at the front and within easy reach from one position. The machine is fitted for supplying water to the grinding wheel when so desired, as is necessary when grinding steel, &c. The rear base serves as a reservoir for water from which it is delivered to the wheel by a centrifugal pump. A heavy knife bar, such as is used on the company's standard line of knife grinders, can also be furnished, which can be bolted to the table for grinding any length of knife up to the capacity of the machine, and readily removed when not needed.

The sizes of table working surfaces vary from 17 x 50 in. wide up to 17 x 130 in. wide; the larger sizes have a central base with pedestal end supports for the bed. The other style of machine, carrying a larger wheel with solid head, is recommended for heavy work, such as guide bar grinding, &c.

On May 8, the New York office of the Ohio Brass Company, whose main offices and works are at Mansfield, Ohio, will be removed from its present location in the Wall Street Exchange Building, 43-49 Exchange Place, to room 1022, Hudson Terminal Building, with entrances at 32 Cortlandt street and 30 Church street. The

understandings and controversy that present methods of independent classification afford, it is highly desirable that the efforts of the association shall yield tangible results.

A meeting of the committee having this matter in charge will be held next week for the purpose of considering the suggestions offered and compiling data for presentation at the regular meeting of the association. This committee is comprised as follows: J. P. Murphy, general storekeeper, Lake Shore & Michigan Southern; J. M. McCarthy, purchasing agent, Chicago, Rock Island & Pacific; G. R. Ingersoll, purchasing agent, Lake Shore & Michigan Southern; A. C. Mann, chief clerk purchasing agent, Illinois Central; T. J. Frier, general storekeeper, Chicago, Burlington & Quincy; H. E. Rouse, general storekeeper, Chicago & Alton.

The H. K. Porter Company, having general offices in the Union National Bank Building and works at Forty-ninth and Railroad streets, Pittsburgh, has recently taken an order for six of its 18-in. gauge air locomotives for gathering purposes in the mines of the Homestake Mining Company, Lead, S. D.

THE IRON AGE

Established in 1855.

New York, Thursday, May 7, 1908.

Entered at the New York Post Office, as Second Class Mail Matter.

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RICHARD R. WILLIAMS,	- - - - -	HARDWARE EDITOR

The Steel Corporation's Earnings in 1908.

The United States Steel Corporation's report for the first quarter of the year has been variously commented on, and differences of opinion are natural at a time when the general disposition is to find favorable signs, even though current business is at the lowest point for the year. There is not much call for analysis of the statement. The outstanding fact in it is that at \$18,229,005 the earnings were about 45 per cent. of the average in 1907, when the total was \$160,964,673, or at the rate of about \$40,000,000 a quarter. Knowing that in the main the prices realized on the business of the first three months of this year were up to the average for 1907, it may be inferred that the shipments of the first quarter were about 45 per cent. of the average for a 1907 quarter. For the entire year 1907 the corporation's production for shipment was 10,578,433 gross tons, or an average of 2,644,608 tons per quarter. Forty-five per cent. of this amount would be 1,190,073 tons.

Turning now to the statement of unfilled orders on hand March 31, the total is reported to have been 3,765,343 tons, or 859,210 tons less than on December 31, 1907. We have not attached the significance to these statements of unfilled orders that in some quarters has been given them. For one thing, no explanation has been published of the way in which continuous sliding scale contracts are reckoned in making up these totals. However, on their face the last two statements of orders on hand, when taken in connection with the approximation made above of the tonnage of rolled material shipped in the three months ending with March, would indicate that the new business booked in the first quarter of the year was but a small fraction of the corporation's capacity.

The smallness of the deductions made from the first quarter's earnings for sinking fund on bonds of subsidiary companies and for depreciation and extinguishment funds has been a matter of comment. The amount so deducted was \$2,026,745 (\$291,518 for sinking fund and \$1,771,227 for depreciation and reserve). This compares with \$4,154,521 for the March quarter last year and \$6,723,230, \$7,109,180 and \$6,177,798, respectively, in the subsequent quarters. As between a statement showing that the common dividend was not wholly earned and one making a small deduction for depreciation, the latter alternative was evidently chosen.

It is to be remembered in connection with any analysis of the Steel Corporation's financial statements that the policy in prosperity is to make deductions for depreciation, replacements and new property that at such times seem inordinate to holders of common stock. Last year

the amounts set aside for new construction reached a total of \$54,000,000, and in 1906 they were \$50,000,000. These amounts were in addition to \$3,500,000 for special replacement and improvement funds and \$15,560,237 which the annual report designated as "the regular provision for the year" for extraordinary replacement funds. It is to be recalled, also, that before the total earnings, \$160,964,673, for 1907 were arrived at, deductions had been made by the various subsidiaries for "ordinary repairs and maintenance," amounting approximately to \$35,000,000.

In the light of the exceedingly heavy, even drastic, deductions made in good years, the statements of the corporation in years like 1908 seem to be entitled to a less pessimistic judgment than has been passed by some reviewers.

British Manufacturers and the Campaign Against Free Trade.

Until the split in English political parties over Gladstone's Home Rule bill in 1886 British iron and steel manufacturers were mostly of the Liberal party. Up to that time, by tradition and association, most manufacturers in England were with the Liberal party. Thousands of them changed their political alignment in 1886 and threw in their lot with the Liberal Unionists. This change soon came to mean that they were of the Conservative party, for only in a few places since 1895 have the Liberal Unionists maintained their political organizations and sought to hold themselves apart and distinct from the Conservatives, with whom for more than 20 years they have been so closely allied. What proportion of English iron and steel manufacturers is now prepared to act with the Conservatives and support the movement for tariff reform is almost impossible of ascertainment, but if conditions in one important iron and steel district are any guide, the tariff reform movement as it is now being pressed on the British electorate must be receiving considerable support from these interests.

Warrington, which is the town in mind, is one of the oldest and one of the largest centers of the iron and steel industry in Lancashire. There are three great plants there, which for many years have enjoyed a world wide distinction for their output. The men in control of two of these plants are to-day among Chamberlain's strongest supporters, although the father of one of them, who was one of the founders of the largest plant, was actively associated with Cobden in the movement which resulted in 1846 in the adoption of free trade in England. Long before the United States began to export iron and steel, Warrington had to meet with much competition from Belgium and Germany; and it is probable that this competition has had more to do with bringing Warrington iron manufacturers into line with the Chamberlain movement than any competition which the old established industries of the town have had to meet from this side of the Atlantic.

Most of the Warrington men who have identified themselves with the Chamberlain movement are active in the political life of the constituency—a constituency which is now represented in the House of Commons by a free trader. But in industrial England employers have little influence over the votes of their work people. This influence has decreased with the successive extensions of the Parliamentary franchise, with the growth of population in the industrial centers, and, in recent years with the organization of the Independent Labor party, which has now some 30 representatives in the House of Commons. If Warrington is taken as typical of the iron and steel

centers of England and Scotland, and the proportion of iron and steel manufacturers in favor of the abandonment of free trade is as large at each of them as it is at Warrington, the Chamberlain party can count on the votes of the individual manufacturers. They can control few Parliamentary votes other than their own, however, although they may be able to subscribe pretty liberally to the funds by which the present vigorous and persistent Chamberlainite propaganda is being maintained.

The Health of Industrial Employees.

The health of employees in manufacturing establishments constitutes a factor in economical production which is highly worthy of consideration. The workman who has to be absent a part of the time because of bodily ailment must necessarily upset shop routine; if his work is highly specialized, so that it is difficult to fill his place temporarily, the result may be serious in disturbing the balance of manufacturing. Even if a man continues his employment despite impaired health his usefulness depreciates perceptibly.

Progress in shop sanitation has of late been rapid. Good light, ample ventilation, better heating apparatus and approved toilet conveniences have been carefully provided. Manufacturers have kept pace with the general movement to better the condition of those whose days must be spent in factories. Environments have been made satisfactory in most trades. To-day science is going beyond this point. The workman is receiving individual attention from his employer and from those who frame laws. An important step in this direction was toward protection from contagion, especially from tuberculosis. Such pioneer movements as that inaugurated at Providence, R. I., some two years ago have served as powerful examples to other communities, for so excellent have been the results that the initial work of the Brown & Sharpe Mfg. Company and one of the large textile mills of the city has now extended to include 35 employers of labor, with thousands of employees on their payrolls. Under this system the shop management maintains the right to suggest the examination of any employee who may have symptoms of tuberculosis, while the employee may forestall the suggestion and seek the services, free of charge, of a highly trained specialist who is co-operating in the work. Victims of the disease are assisted as far as possible in securing employment out of doors or in seeking a more congenial climate. No tuberculosis patient is permitted to remain in the works. The movement is spreading elsewhere. In Connecticut a commission is investigating the general subject of tuberculosis with the purpose of recommending State laws to govern its control, including its presence in manufacturing establishments.

The modern tendency to look after the health of individual employees is shown in another aspect in a new movement in this country, following one that has been in progress abroad for several years. It has been started by the Dental Hygiene Council, recently organized by delegates representing several American dental organizations of the highest rank, including that of Harvard University. Its special purpose is to furnish literature designed for popular education and to further advance the science of the hygiene of the mouth. A specific purpose is to co-operate with organizations working to check and control tuberculosis. Physicians agree that many of the evils that come to the human body are due directly or indirectly to failure to care for the teeth properly. Mal-nutrition alone is a frequent outcome of such negligence.

As a means of infecting the system with the bacilli of disease, especially tuberculosis, typhoid and diphtheria, ill cared for teeth have no superior in the whole anatomy.

An excellent beginning in this direction is being made in the public schools by instruction in the hygiene of the body and by a system of medical and dental inspection. Many cities employ physicians to inspect the schools regularly for cases of sickness, defective hearing and sight, &c. In a few places high class dentists are provided to make compulsory examination of the teeth of children and to furnish treatment free of charge or at small cost. If this system spreads through the country, as it is believed it will, the workman of the future will be blessed. It is advocated that the education of employees, especially of young persons, in this direction would bear profitable fruit. In a small way this sort of work is already going on. The foreman who takes an interest in those under him will advise skilled treatment for any trouble that comes to his attention, especially if it causes the employee to lose time. It is confidently prophesied that the general modern movement will go much farther than the point it has now reached as the employer assumes a more direct interest in his working people, impelled by the combined motives of human kindness and the practical business advantage that comes with the services of employees in the full possession of their health. If this condition is brought about it will be but following along the same line as that of the shop surgeon of the present day, a side of industrial management which is becoming common, and which is supplemented in large works by well equipped private hospitals. Already there has grown out of this practice the employment of a regular shop physician who looks after employees when they are ill as well as when they have been injured. The best of the cotton mills of the South are said to have adopted this system as a most important element in keeping together their communities of workers.

It is not difficult to see where a judicious system of education of employees in the various sides of hygiene might be profitable. Probably many employers would answer that such seed would fall on barren ground; that literature and lectures, and even advice from heads of departments or other administrative officers, would receive scant attention. Yet there must always be a percentage of receptive minds, especially among the younger element, who have not formed prejudices against the teachings of modern medical science, who would materially profit by a work of this kind. Light and ventilation and sanitary plumbing do not constitute everything in making shop or factory environment wholesome and healthful. Individual hygiene among employees is as important. The danger of infection, one from another, must be guarded against, a matter of special importance where contagious disease is epidemic, as it is occasionally in industrial communities. Attention to these details must not be regarded by the business man as a philanthropy alone, although it is occasionally applied with that end only in view. It is a matter of economics. There can be little doubt that the normal, healthy workman does better work and more of it during a given period of time because he is strong of body, clear of mind and happy of spirit.

In certain lines some manufacturers of highly finished products, who have been taking business at exceedingly low prices in anticipation of cheaper steel, have evidently become convinced that no reduction is to be expected in the near future, and are covering at least part of their requirements. This is a development of considerable im-

portance, as it tends to allay the suspicion that the low prices referred to would not have been made if these manufacturers had not had the backing of some of the steel makers. It is possible that the disposition to "go short" on raw material has been quite extended, and that for this reason the maintenance of prices may soon lead to much more buying as delivery dates draw nearer.

The Waterways of the United States.

Associations of business men from various parts of the country have been pressing upon the attention of Congress proposals for waterway improvements which would involve the expenditure of about \$500,000,000. Many of these proposals have great merit, and the majority of them would prove good investments for the nation if they were all carried through to completion. The country has no national system of waterways, but if a few connecting links and river improvements were provided it would make a great difference in the cost of assembling raw materials for industries and the cost of carriage of other bulk freight.

At present the railroads carry more than 93 per cent. of the inland freight of the country. The Great Lakes carry about 5 per cent., the Ohio River less than 1 per cent., the Mississippi less than one-third of 1 per cent., and various canals and rivers contributing similarly small fractions. While waterways carry so slight a share of the tonnage of the country, they have been of great value in the past, and may be equally important in the future, in fixing the cost of materials.

Railroads Competing with Existing Waterways.

Pittsburgh, with no native iron ore on which to build up a great industry, has the cheapest coal in the United States, brought in by river or by rail, and by the latter at low rates to meet river competition. The low cost of carrying ore on the lakes has made the district between the Ohio River and Lake Erie the greatest iron producing center in the world. Fifty years ago, when railroads carried only passengers and package freight, no one dreamed that it would ever be possible for them to carry bulk freight at the low rates which prevail in the Pittsburgh-Lake Erie District; yet the railroads which have developed this traffic are the most prosperous in the country.

In the same manner the Erie Canal established a low area of raw material costs along the line from the Hudson River to and through the lakes, and great manufacturing cities have grown up along this line and in the area to the south of it, where the trunk lines from Chicago to the seaboard have made low rates to meet lake and canal competition. The most remarkable feature of this problem is that water competition makes railroads pay, because it builds up industries by making low rates for bulky materials. A casual glance at the map of the country will show that the railroads which have no water competition have very little industrial development.

The people of New York State seem to have had an instinctive understanding of this fact when they gave an overwhelming majority, five years ago, in a referendum vote, to the proposal for spending \$100,000,000 in building a new Erie Canal. The engineers estimate that when the new canal is completed freight can be carried between New York and Buffalo at a cost of 25 cents per ton. The canal will take barges of 1500 tons capacity, and one boat with power can tow three, so that one crew will handle a maximum cargo of 6000 tons.

Government records based on more than 50,000,000 tons of freight passing through the Sault Ste. Marie Canal show that the average freight paid on all classes of lake traffic in 1906 was 0.84 mill per ton-mile. On the average haul of 842 miles this would be equal to about 70 cents per ton. This would make the cost of transportation about \$1 per ton, or 5 cents per 100 lb., between New York harbor and ports on the lakes.

Proposed Important Waterways.

Barges adapted to the Erie Canal would not be strong enough to go on the lakes or the Atlantic, but they could use the proposed coast inland passage from Boston to Beaufort, S. C., which might be extended to Florida. This proposed passage would seem at first thought to be a useless expenditure of public funds, but it would afford a much wider range of usefulness to the canal barge and would bring a large industrial area into direct and cheap communication with the lakes. Only four artificial links are needed: A short canal from Massachusetts Bay to Long Island Sound, a new canal from New York Harbor to the Delaware River, one from the Delaware River to the upper end of Chesapeake Bay, and from the lower end of this bay to Albemarle Sound. The two last mentioned links are only 14 miles in length.

The taxpayers of Chicago, through a commission authorized by the State of Illinois, have expended \$50,000,000 on a wide 22-ft. channel from Lake Michigan to Lockport, on the Des Plaines River, a short distance above the junction of the latter with the Kankakee to form the Illinois River. In the State election next fall the people of Illinois will vote on a proposal to expend \$20,000,000 in extending this waterway to the head of navigation in the Illinois River, and to develop incidental water power. The water diverted from Lake Michigan has made a minimum depth of 8 ft. in the Illinois River below La Salle, but there are rapids and other obstacles to be overcome between Lockport and La Salle. Some years ago United States engineers made a survey which showed that it would only cost \$23,500,000 to make a 14-ft. channel from Lockport to the Mississippi River, which is less than half the amount that Chicago has already expended.

Possibilities of the Mississippi River.

The Mississippi below Cairo has a minimum depth at the lowest stage of water of 10 to 12 ft., and a much greater depth for the greater part of the year. It carries a paltry 5,000,000 tons of freight annually, much of this coming from the Ohio River, compared with 100,000,000 tons carried annually on German rivers and 30,000,000 to 40,000,000 tons on the Rhine. From Cairo to St. Louis there has been a minimum of 8 ft. of water the past three years, but north of St. Louis, to St. Paul, there is a low water season when the depth does not exceed 5 ft. South of St. Louis there are few winters when the river freezes over.

The Missouri River has been neglected for many years by Congress, and is now full of sand bars and snags which make navigation dangerous, but the business men of Kansas City organized a barge line two years ago which they have been operating successfully. A large steel company in Chicago was puzzled last summer by the fact that a jobbing customer at Kansas City could sell merchant iron and steel in that territory at lower prices than cost and freight would apparently permit. Investigation disclosed the fact that the jobber was having his goods shipped to St. Louis by rail and from there to Kansas City by barge. There would be great possibilities in combinations of rail and river rates if the Mississippi and its tributaries were developed as highways for traffic, as illustrated in this instance.

The business men of Kansas City are working vigorously for the improvement of the Missouri as far as Sioux City. The river has sufficient volume for a minimum depth of 12 ft., and it is estimated that the cost of establishing a permanent channel of this depth would be about \$50,000 per mile, while the river would have the capacity of many lines of railroad. It could be made navigable for more than 2200 miles from St. Louis.

The Ohio River, although plans adopted by Congress 30 years ago for a 6-ft. minimum depth have never been completed, carries 15,000,000 tons of freight annually. It has many navigable tributaries, and if these and the rivers flowing into the Mississippi were connected with the lakes at Chicago the West would have a great system of internal waterways.

Barge Capacity.

The capacity of barges in a canal is limited more by the width of the channel than by the depth, but on a

river large cargoes can be taken in a fleet of barges. One river steamer used as a towboat has taken a fleet of barges from Pittsburgh to New Orleans, carrying the enormous cargo of 70,000 tons of coal. A lumber company on the lower Mississippi uses a towboat and three barges, which take 10,000 tons up stream at the rate of 8 to 10 miles per hour. The barges on the Mississippi are usually lashed together in a triangular formation, with the towboat at the rear, so that 20 or more barges can be taken in one "tow."

River transportation is so much cheaper, mechanically as well as financially, than hauling by rail that it is surprising that more use is not made of the great river systems of the West. The improvement of the Ohio may lead to a larger development of this traffic. The shipping interests of the Ohio Valley are asking Congress for a 9-ft. channel, but if they were sure of a 6-ft. minimum at the lowest stage from Pittsburgh to Louisville they would make the Ohio the Rhine of America.

The national Government has expended hundreds of millions of dollars for harbor improvements and for works like the Sault Ste. Marie Canal and other lake improvements, all of which have proved valuable in promoting commerce. The advocates of interior waterways claim that equally great benefits would accrue from the expenditures which they propose. The freight tonnage of the country has doubled in the past 10 years, and if it goes on increasing at anything like this rate the existing railroads will be unable to handle it and provide for the growing interference of passenger with freight traffic.

Cincinnati Metal Trades Committees.

President John W. Neale of the Cincinnati Metal Trades Association has just named his standing committees for the year. The Cincinnati organization is one of the largest in the country, and in the distribution of work President Neale has selected his material carefully and included every branch of manufacturing concerned in the organization. The new committees are as follows:

EMPLOYMENT BUREAU: E. F. Du Brul, Miller, Du Brul & Peters; Oscar Mueller, Mueller Machine Tool Company; Rudolph Mueller, William Powell Company; H. M. Norris, Bickford Drill & Tool Company.

FINANCE: J. C. Hobart, Triumph Electric and Triumph Ice Machine companies; Fred A. Geier, Cincinnati Milling Machine Company; Samuel L. Moyer, Lunkenhelmer Company; S. P. Egan, J. A. Fay & Egan Company.

MEMBERSHIP: P. G. March, Cincinnati Shaper Company; S. P. Egan, Fay & Egan Company; August Tuechter, Cincinnati Machine Tool Company.

TRANSPORTATION: C. Wood Walter, Cincinnati Milling Machine Company; C. P. Egan, Fay & Egan Company; William Hermann, Fosdick Machine Tool Company.

APPRENTICESHIP: J. H. Day, J. H. Day Company; C. H. Fox, Ahrens Fire Engine Company; Joseph Wolf, Hissey-Wolf Company.

TECHNICAL EDUCATION: Fred A. Geier, Cincinnati Milling Machine Company; J. C. Hobart, Triumph Electric and Triumph Ice Machine companies; J. H. Day, J. H. Day Company; William Lodge, Lodge & Shipley Company; S. P. Egan, Fay & Egan Company.

CO-OPERATIVE COURSE: A. E. Robinson, American Tool Works Company; George Langan, Cincinnati Planer Company; O. H. Broxterman, Steptoe Shaper Company; Isadore Rauh, Cincinnati Electrical Tool Company.

NEW TOOLS AND DEVICES: F. L. Swanberg, D. T. Williams Valve Company; William A. Greaves, Greaves, Klusman & Co.; William F. Pfau, Towsley Mfg. Company.

LEGISLATION: F. Pentlarge, Sr., U. S. Bung Mfg. Company; Geo. McG. Morris, John B. Morris Foundry Company; F. Johanningman, J. M. Robinson Mfg. Company; Phillip Gaukel, Chas. R. Hoppe & Co.; John McNeale, John Douglas Company; Hugh Merrie, Merrie Company.

ENTERTAINMENT: E. H. Hargrave, Cincinnati Tool Company; P. O. Geier, Cincinnati Milling Machine Company; R. B. McGowan, John H. McGowan Company; E. Von Wyck, Von Wyck Machine Tool Company; S. C. Schauer, Cincinnati Machine Tool Company.

Experiences at recent meetings of the association and comparison of notes regarding business indicate that there is a better feeling among the members. The annual diversion in which the working forces from all the shops participate will be a feature of midsummer. The Cincinnati organization is the one which first agitated the subject of trade schools, and this subject will be a special study with the committee named on technical education.

March Exports and Imports of Iron and Steel.

Our iron and steel exports are showing a continuance of the increase noted in recent months, according to the report for March of the Bureau of Statistics of the Department of Commerce and Labor. The total value of such exports, not including ore, for the month of March, was \$15,165,910, against \$14,069,249 in February and \$13,643,828 in January. Taking the commodities for which quantities are given, the March total is 96,437 gross tons, against 81,755 tons in February and 74,352 tons in January. The following table gives details of the exports of such commodities for March and for the nine months of the current fiscal year ending with March as compared with corresponding periods of the previous year:

Exports of Iron and Steel.

	March,		Nine months,	
	1908.	1907.	1908.	1907.
Pig iron.....	2,528	7,291	38,823	63,470
Scrap.....	1,940	1,730	13,111	10,606
Bar iron.....	507	783	11,494	37,601
Wire rods.....	356	5,775	4,958	8,395
Steel bars.....	5,830	3,540	53,795	27,966
Billets, blooms, &c.....	23,444	14,343	79,660	93,944
Hoop. band, &c.....	181	667	7,784	5,195
Steel rails.....	10,107	25,310	231,252	220,945
Iron sheets and plates.....	2,761	2,736	32,642	20,000
Steel sheets and plates.....	4,982	9,190	47,116	71,899
Tin and terne plates.....	2,639	825	7,671	4,248
Structural iron and steel.....	13,185	11,778	107,047	90,075
Wire.....	12,252	13,576	120,873	123,820
Cut nails.....	582	342	4,326	5,352
Wire nails.....	3,235	4,268	30,390	29,082
All other nails, including tacks.....	340	680	4,723	5,085
Pipes and fittings.....	11,568	9,953	138,255	94,227
Totals.....	96,437	112,787	933,920	911,933

The imports of iron and steel show no recovery from the decline, which has been in progress for several months. The total value of imports of iron and steel and manufactures thereof, not including ore, for March was \$1,696,800, against \$1,697,525 in February and \$2,076,766 in January. The decline is more perceptible in imports of commodities for which quantities are given, as the total of such imports for March was only 15,885 gross tons, against 19,054 tons in February and 28,008 tons in January. The following table shows the details of the imports of these commodities for March and for the nine months of the current fiscal year ending with March as compared with corresponding periods of the previous year:

Imports of Iron and Steel.

	March,		Nine months,	
	1908.	1907.	1908.	1907.
Pig iron.....	5,711	55,692	186,773	392,381
Scrap.....	434	502	16,966	13,246
Bar iron.....	1,918	2,660	30,484	30,055
Rails.....	28	395	2,209	3,524
Hoop, band, &c.....	151	...	437	4,058
Billets, bars and steel in forms n.e.s.....	1,054	1,207	13,785	15,230
Sheets and plates.....	179	256	1,984	2,777
Tin and terne plates.....	5,343	7,268	42,384	45,407
Wire rods.....	1,025	1,459	11,125	13,134
Structural iron and steel.....	42	233	1,367	8,588
Totals.....	15,885	69,672	307,514	528,400

The imports of iron ore in March were 52,729 gross tons, against 80,094 tons in February and 75,997 tons in March, 1907. The imports of ore from Cuba were 48,900 tons, against 37,420 tons in March, 1907.

The total value of all kinds of exports of iron and steel, not including ore, for the nine months ending with March, was \$145,565,259, against \$132,025,706 in the corresponding period of the previous year, while similar imports were respectively \$22,867,114 and \$29,072,327.

The Daisy Automatic Dryer Company, 506 Grant street, Pittsburgh, manufacturer of automatic machines for drying sand, gravel and other minerals, is now building them in various sizes to suit requirements. The company has prepared a catalogue covering a description of the machine.

The Westinghouse Electric & Mfg. Company's Condition.

Stockholders of the above named company received last week a letter from George Westinghouse, president, in which the situation in the affairs of the company is plainly stated. After reviewing what has been accomplished since the appointment of receivers, October 23, toward harmonizing the interests of various creditors, he refers to the lack of response on the part of stockholders to the request for new capital made a year ago this month. In this connection he says:

In order to meet the situation resulting from this lack of support on the part of the stockholders, the Security Investment Company, with the aid of my personal resources (the Investment Company and myself owning together about 50 per cent. of the outstanding assenting and preferred stock), made large contributions to the company in an effort to maintain its solvency. These efforts resulted in the exhaustion of my own resources as well as those of the Security Investment Company. It is, however, my expectation that through a plan and agreement recently submitted to the creditors of the Security Investment Company, which has already been accepted, signed or agreed to by many of its large creditors, the assenting stock required to be taken by that company will be provided for as well as the stock required to be taken by me personally.

There have, however, already been deposited under the Readjustment Committee's plan of January 20 more than a majority of all of the creditors' claims, and this majority empowers the Readjustment Committee to determine the advisability of a sale of the company, so that a failure on your part to subscribe for one new share of assenting stock for each four shares or fraction thereof of preferred and assenting stock held by you will almost certainly result in a sale of your property for the benefit of creditors (and the elimination of all present stock interests), and will, in my judgment, entail losses to the property far in excess of the sum required to rehabilitate the company.

Should the usual course of a sale to a new company be adopted, there undoubtedly would be some provision for a participation by those stockholders who will submit to an assessment in order to retain their interest in a greatly depreciated equity; but this assessment will certainly be larger in amount and upon more onerous terms than the subscription now solicited.

Mr. Westinghouse presents the following reasons why stockholders should act promptly in making subscriptions to their pro rata number of assenting shares:

I believe the plan of the merchandise creditors, to which I have given my time and best thought and which has my unqualified approval, is the only plan which will restore the value of your interest in the company. If all stockholders subscribe, the merchandise creditors' plan will be made effective and the company placed on a strong financial basis, making the purchase of the new stock a safe investment besides restoring the value of your present holdings with an assurance of dividends after the restoration of general business to a normal basis.

If a sale of the property results from the inaction of the stockholders, no money invested in the purchase of a future interest as a result of a drastic reorganization can be anything like as safe and profitable an investment as the subscription to shares now asked for with a consequent uninterrupted operation of the company. Will not each stockholder assist the efforts being made by the Readjustment Committee, the Merchandise Creditors' Committee, numerous stockholders and many others interested in the situation to perpetuate a business of such great importance in the industrial world, and thereby protect his own interests? If you do not subscribe, you in effect vote for a sale of the property by the creditors and thus the elimination of all stock interests.

The Stockholders' Committee, composed of Charles Francis Adams, Charles J. Canda, George W. Guthrie, Alvin W. Kreh and George T. Oliver, also addressed a circular to stockholders, in which they say:

We join with George Westinghouse, president of your company (to whose official and personal efforts you largely owe the forbearance of your creditors and the present opportunity to protect your investment), in again urging your immediate response to our circular of April 3. The failure of any stockholder to take his pro rata amount of the new stock affects, not only his own interests, but also those of all other stockholders.

Over 500 stockholders have already subscribed for the new stock at an average rate slightly above one share for every four shares of existing stock held by them. These subscriptions are exclusive of the very considerable amount already under agreement in the interest of the Security Invest-

ment Company. It rests with the stockholders to determine whether by promptly subscribing for the new stock, they will protect their property and save it from being sacrificed at forced sale by the creditors.

The Franklin Institute.

The April issue of the *Journal of the Franklin Institute* contains the text of a lecture delivered by Dr. Persifor Frazer before that society on the occasion of the reception held February 14 to inaugurate formally its reorganization. Founded in 1824, the institute has an admirable record of work performed by able and unselfish men in promoting the progress of the mechanic arts by exhibitions, by the publication of its *Journal*, by its lectures and school and by its library. It never received any aid from the Federal Government, from the State of Pennsylvania or from the city of Philadelphia. In recent years the average annual cost of running the institute has been about \$20,000, of which less than one-tenth is covered by its income. Following are some interesting excerpts from Dr. Frazer's lecture:

In February, 1906, it was ascertained that although in the previous year the increased principal of the Franklin fund, less the £1000 set apart by the will, had been awarded by the Board of Wills Hospital and Minor Trusts to a body of citizens for the erection of an art gallery, yet no steps had in the meantime been taken to erect such a gallery, and the conditions of the gift being unfulfilled the appropriation was null and void.

A committee was appointed to solicit contributions for a new building. Alfred C. Harrison was a member of this committee, and in addition to his generous acts in connection with this and many other charitable institutions, he headed the list with a subscription of \$50,000, to which the Baldwin Locomotive Works added \$25,000. In a short time \$100,000 was subscribed.

The city of Boston had managed the like sum of £1000 which Franklin had left to its care so much more successfully than the city of Philadelphia that it had grown to \$418,000 in contrast with \$125,000 here. The city of Boston determined to apply it to the erection of an institute, and to this end donated a plot of ground worth \$100,000. Andrew Carnegie gave an amount equal to that derived from the Franklin bequest toward this end, making the fund \$836,000, or with the city of Boston's contribution \$936,000—close to a million dollars.

The Franklin Institute Committee proposed to the Board of Trustees to transfer to the city of Philadelphia a plot of ground secured for the Franklin Institute at the corner of Sixteenth and Arch streets, and to add the sum of \$100,000 to be paid to the city on condition that the city would become trustee of the building fund, holding the building when erected exclusively for the uses of the Franklin Institute; and further, that the city would add the Franklin fund of \$125,000 to the institute's contribution of \$100,000 for the purpose of erecting the building. This offer was accepted April 16, 1907. While the ability of the Franklin Institute to raise the necessary amount of money agreed upon was still in doubt, Mrs. Anna W. Walker generously and most opportunely gave the princely subscription of \$50,000 in memory of her father, Mr. Weightman, thus clinching the proposition and assuring the institute a new lease of life under greatly improved conditions. The amount now in hand is as follows:

Franklin Fund, from the city of Philadelphia.....	\$125,000
Old Building Fund.....	20,000
Subscriptions to date.....	193,455
	\$338,455

Add the value of the present building (say)..... \$60,665

Total in round numbers..... \$400,000

At least \$200,000 more is needed to provide a suitable building as a memorial to Benjamin Franklin, and the (Benjamin) Franklin Institute, and an additional sum to furnish an endowment for maintenance.

The general plan is to erect a four-story building with high basement, which latter is to contain the laboratories and an exhibition hall, seating about 500 people. The second floor will contain the balcony of the auditorium

and the committee rooms, secretary's room and a museum showing the developments of the arts. The fourth floor is for the library, in which it is proposed to use the combined alcove and stack system. If the building be erected at Sixteenth and Arch streets the auditorium entrance will be on Sixteenth street and the main entrance on the new boulevard.

Seattle Business Notes.

SEATTLE, WASH., April 29, 1908.—Each month in the Northwest shows an improved condition in the iron and steel trade, though affairs have not yet reached the high water mark credited to last year. Seattle representatives of the Carnegie Steel Company and its allied concerns say that a slight betterment is to be noticed in the trade of April, as compared with March, with regard to bars, sheets, &c., used by the general trade. Agents of the American Bridge Company also say the tendency is toward improvement. Two or three large steel buildings are under way in Seattle and others are contemplated.

Because of the uncertain condition of the lumber business, through the fight against the railroads before the Interstate Commerce Commission, little steel has been bought in the last six months for the extension of logging roads. If the lumbermen win the long struggle, to the degree of a victory for the 40-cent rate into Missouri River territory, activity in logging operations will be resumed on an extensive scale. A. F. Coates, one of the heaviest timber owners in Washington, has just ordered 400 tons of logging rails for the extension of his operations in southwestern Washington into a new timber belt.

J. P. Morgan and the Guggenheims, who are jointly interested in immense projects in Alaska, have about 3300 tons of 70-lb. rails in Seattle awaiting shipment to their base of operations near the mouth of the Copper River. A total of about 6700 tons has been forwarded to the North, indicating the magnitude of the syndicate's operations in the Copper River District. The railroad is known as the Copper River & Northwestern, and is building in from the coast to the Bonanza copper property. It is estimated by mining engineers that the copper from this district can be put on the market at as low as 6 or 8 cents a pound. Eventually it is the plan to extend this railroad across the interior of Alaska to the Yukon, Fairbanks and Dawson. The Copper River is a large stream, and because of a glacier must be crossed twice not far from the mouth. The first crossing will be made by the railroad temporarily with trestlework, so that the construction of a bridge may proceed at the second crossing. These bridges when completed will be large structures, with a length of 1200 to 1500 ft., with spans of 500 or 600 ft. While the railroad is building to the mines, three or more boats are to operate from the Bonanza mine on the river carrying out ore. This service is to be established as soon as weather conditions permit.

The broad scope of the Morgan-Guggenheim operations is not realized generally. So far the syndicate has expended considerably more than \$5,000,000 in Alaska, in addition to immense sums in low grade mining properties and huge dredges in the vicinity of Dawson, in the Klondike District. Some of the largest dredges in existence are operated in the worked-over ground of the Klondike, and they bring great yields because of the low cost of operation. The Morgan-Guggenheim interests have obtained control of most of the boat lines to Alaska, they are close to the management of the White Pass & Yukon Railway, and by dominating other concerns have obtained what is virtually a monopoly of transportation to and from Alaska and in the district itself.

Seattle is the main base for the operations of the syndicate, which is generally known as the Northwestern Commercial Company. Annual meetings of this concern and its subsidiaries, the Northwestern Fisheries Company, the Katalla Company, the Alaska Steamship Company, &c., have just been held in Seattle, and have been attended by S. W. Eccles of New York. Mr. Eccles announces that three or more steel boats will be built to add to the Alaska fleet, and that the company's expenditures

in Seattle hereafter will aggregate \$4,000,000 to \$5,000,000 annually.

Several million feet of lumber have been purchased on Puget Sound by the railroad syndicate, for the Alaska timber is not available for or suitable to the company's needs. In the fisheries operations the Northwestern Fisheries Company has sent north tin and sheet iron to the extent of 40 carloads. About eight canneries are to be operated this year.

Northwestern steel and iron men are interested in the awarding of contracts for the supply of iron and steel equipment by the Government for the Puget Sound Navy Yard and the Mare Island yard at San Francisco, bids for which are to be opened in Washington May 12.

The approaching visit of the battleship fleet to Puget Sound, scheduled for May 23, has stimulated activity at the Puget Sound Navy Yard, which has just completed a renovation of the Pacific squadron, consisting of a dozen battleships and cruisers. The navy yard now employs 2200 men.

Moran Brothers' ship yards at Seattle have launched what is said to be the most powerful tug on the Pacific. It is for the Southern Pacific Railway Company, and will be used for towing in San Francisco harbor and fire protection to the Harriman terminals in that city. The tug has been christened the Ajax, and will cost when completed approximately \$100,000. It is 110 ft. long and has engines totaling 800 hp.

W. T. P.

Labor Notes.

The annual convention of the Amalgamated Association of Iron, Steel and Tin Workers began its sessions in the Tod House, Youngstown, Ohio, on Tuesday, May 5. P. J. McArdle, president of the organization, has appointed Wage Scale committees, with a vice-president as chairman of each, as follows: Boiling Division, Thomas Williams, Pittsburgh; Finishing Division, Ben. F. Jones, East Chicago; Sheet Division, Llewellyn Lewis, Martins Ferry; Tin Division, Walter Larkins, Martins Ferry. The convention will be important, as it is probable that the bar iron manufacturers will demand a lower wage scale, and also for the reason that the Republic Iron & Steel Company some time ago terminated the agreement by which its mills were to continue in operation after July 1, when the scale expires pending a settlement of any dispute by arbitration. It is not known at this time what the policy of this company will be toward the Amalgamated Association when the present scale expires on July 1, but it is likely that all the bar iron manufacturers will demand a reduction in puddling and finishing. It is not unlikely that the sheet and tin plate makers, in view of the lower prices ruling for sheets and tin plate, will also ask a reduction.

Members of the Iron Molders' Union who went on strike from the foundries of Milwaukee May 1, 1906, were given notice April 23 that they would not be paid any more strike benefits by the national union after May 5. The local union thereupon declared the strike at an end. It is said to be unlikely that any of the strikers can be given positions as it is the intention of the foundrymen to take care of the independent men, some of whom are idle at present on account of the depressed condition of business. The Milwaukee molders' strike was by far the largest of that craft in number of men and plants that has taken place in a single city in many years.

One of the important branches of the National Metal Trades Association reports that the number of men sent out by its employment bureau last week to take positions indicates a greater demand for competent men, and that many concerns report a gradual return to their former number of employees.

A firm of Boston, Mass., steam fitters, which maintains an open shop, made the lowest bid for work on a city hospital contract, but did not receive the award. Its attorney carried the matter to the Mayor, who decided against the hospital trustees, and took the position that reputable firms operating open shops must not be discriminated against.

PERSONAL.

Frederick D. Herbert, formerly of the Allis-Chalmers Company, is now manager of the New York office, 90 West street, of the Terry Steam Turbine Company, Hartford, Conn., builder of low speed steam turbines for direct connection to pumps, generators and fans.

Edward Bailey Cook, manager of the Warwick Iron & Steel Company, Pottstown, Pa., has gone abroad to visit blast furnace plants in England and Germany.

H. R. Fothergill, engineer and manager of the Scholl Engineering Company, Youngstown, Ohio, has resigned as general superintendent of the Greenville Traction Company, superintendent of the Greenville Gas & Electric Light & Power Company, and superintendent of the Paris Mountain Water Company, all of Greenville, S. C., being operations owned by the American Pipe Mfg. Company (syndicate), Philadelphia. The employees of these companies presented Mr. Fothergill with a fine gold watch, suitably engraved, as a testimonial of their esteem. Having won a high reputation as a constructor of power plants, he will devote most of his efforts in that direction.

The Electric Welding Products Company, which is the new name of the Cleveland Cap Screw Company, Cleveland, Ohio, announces that Edward Busby, formerly with the Midvale Steel Company, is now engaged in its selling department. He has a wide acquaintance among automobile, engine and machinery manufacturers.

W. R. Burrows, formerly purchasing agent for the Norfolk & Southern Railway, has taken charge of the railroad department of Topping Brothers, 122 Chambers street, New York, manufacturing ball bearing jacks, track drills, tool grinders and the Totten brake beam clamp invented by Eugene Totten of the New York Central Lines.

H. G. Perring, secretary of the Engineers' Club of Philadelphia, and formerly engineer with the Keystone Fireproofing Company, has been secured by the General Fireproofing Company, Youngstown, Ohio, as district manager at Philadelphia, with offices in the Drexel Building.

Simon C. Collin has resigned as chief engineer of the Cargo Fleet Steel Company, Middlesbrough, England, and has returned to this country, to engage as consulting engineer in designing steel plants and rolling mills. Mr. Collin's address is 5217 Ridge avenue, Philadelphia.

W. Sandford of Lithgow, New South Wales, pioneer in the Australian iron industry, arrived from Europe last week on the Lusitania, on his way to his home.

W. E. Frick of the Frick & Lindsay Company; W. T. Todd of Somers, Fitter & Todd, dealers in mill and mine supplies, and W. L. Rodgers, president of the Pittsburgh Gauge & Supply Company, will represent the Pittsburgh Chamber of Commerce at the national conference of Charities and Correction, to be held in Richmond, Va., May 6-13.

Edward S. Illig, San Francisco sales manager for the Bethlehem Steel Company, headquarters in the Sherwood Building, is visiting the Eastern States on business.

President R. T. Crane of the Crane Company, Chicago, has been visiting in San Francisco.

Millard F. Bowen has resigned as secretary of the Manufacturers' Club of Buffalo, and has established himself as industrial lawyer at 730 Ellicott Square, Buffalo.

George E. Huggins, superintendent of the Valley Works of the Republic Iron & Steel Company at Youngstown, Ohio, has resigned and has been succeeded by Frank Cunningham, formerly superintendent of the company's Toledo Works.

C. H. Zehnder has resigned as president of the Allegheny Ore & Iron Company, to give closer attention to his interests in the Austen Coal & Coke Company, the Alma Cement Company and the Scranton Bolt & Nut Company.

The annual meeting of the Morse Twist Drill & Machine Company, recently held at New Bedford, Mass., resulted in the election of the following officers: Direc-

tors: Thomas M. Stetson, Gideon Alen, Jr., Herbert E. Cushman, Thomas S. Hathaway, Edward T. Pierce, Russell Grinnell; treasurer, Herbert E. Cushman; clerk, Thomas S. Hathaway. During the year \$162,000 was paid in dividends, and about \$4000 was carried to surplus. The treasurer's report of assets and liabilities was as follows: Assets—Real estate, \$173,785; machinery, \$494,775; merchandise, \$136,232; cash, debts receivable, \$181,490; total, \$986,284. Liabilities—Capital stock, \$600,000; accounts payable, \$68,318; surplus, \$121,956; profit and loss, \$196,000; total, \$986,284.

OBITUARY.

STEPHEN D. NEAL, Southington, Conn., manager of the Etna Nut Company, died April 21, aged 47 years. He was the son of Roswell A. Neal, and was born in Southington, where his entire life was passed. After attending the public schools and the Connecticut Literary Institute at Suffield he entered the employ of the Peck, Stow & Wilcox Company, of which his father was president, and later became the purchasing agent and secretary of the company. He went to the Etna Nut Company 12 years ago as its manager. He was prominent in the affairs of the town, and took an active interest in fraternal societies. He leaves a widow and son.

BERNHARD KEISER died at Fullerton, Pa., April 30, aged 80 years. He was one of the early German engineers in this country, a foundryman and machinist, and designed a number of blast furnaces and much of the mining machinery then in use. He was engineer for the Thomas Iron Company, Hokendauqua, Pa., for many years, and later was one of the members of the firm of Barber, Keiser & Co., foundrymen, at Allentown, Pa. He retired from business some 20 years ago. He was the father of H. B. A. Keiser, formerly chief engineer for the Carnegie Steel Company, now retired and living at Cleveland, Ohio; Frank B. Keiser, Southern furnace superintendent for the Republic Iron & Steel Company, at Birmingham, Ala., and Edward H. Keiser, professor of chemistry, Washington University, St. Louis.

WILLIAM RANDOLPH GARBERTON died suddenly of heart failure at his residence in Chicago, April 29. He had attended to the duties of his business during the day. He was connected with Pickands, Brown & Co. in the capacity of sales agent, and had previously served Joseph T. Ryerson & Son in the same capacity in their New York office. Mr. Garberton was secretary of the Glen View Golf Club and a member of the Chicago Athletic Association. He is survived by a daughter and son, the latter being Harry W. Garberton, formerly assistant superintendent of the Zenith Furnace Company, Duluth, Minn., and now connected with the Semet-Solvay Company, Ensley, Ala.

The S. Keighley Metal Ceiling & Mfg. Company, 819 Locust street, Pittsburgh, manufacturer of the Keighley dust and airproof lock joint metal ceilings, has received an order for 100 squares of ceilings for a department store at Huntington, W. Va.; also an order for a carload of the same style for shipment to San Antonio, Texas, where it will be placed in a convent building. The company is working on some new designs of lock and lap joint ceilings, which it will have ready for the trade in about a month, at which time formal announcement will be made and printed matter issued showing the several styles.

The Jamison Coal & Coke Company, Pittsburgh, in a recent leaflet gives the averages of ash and sulphur determinations for its coke in the four months ending with March. The highest monthly average for sulphur was 0.92 per cent. and the lowest 0.88 per cent. The highest month's average for ash was 11.18 per cent. and the lowest 11.12 per cent. In December 36 determinations were made; in January 40, in February 33 and in March 40. The company has 1250 ovens in Westmoreland County, Pa., with a capacity of 60,000 tons a month of 72-hr. foundry and 48-hr. furnace coke.

Trade Publications.

Steel Springs.—Standard Steel Works, Harrison Building, Philadelphia, Pa. Catalogue. Presents views of the company's spring shops, describes method of testing springs and illustrates a number of elliptic springs designed for heavy locomotive service, coil springs for freight cars, &c. Several dimension sheets are given to facilitate ordering springs.

Lathes, Tools, and Supplies.—Sebastian Lathe Company, Covington, Ky. Catalogue No. 12. Covers products manufactured, engine lathes, foot lathes, speed lathes, and bench lathes, and products handled, shapers, planers, drill presses, attachments, tools and supplies. Lathes up to the 15-in. gap engine type are shown and considerable space is devoted to illustrating and describing wood turning tools, lathe sets, and attachments.

Pipe and Pipe Fittings.—Best Mfg. Company, Pittsburgh, Pa. Folder. Describes the evolutions of flange attaching and the making of pipe connections, by the company's method of welding. Also illustrates the Best gate valves.

Furnaces.—Murphy Iron Works, Detroit, Mich. Catalogue; 22d edition. Pertains to the Murphy automatic smokeless furnace which mechanically feeds and distributes coal, removes ash refuse and is adaptable to any type of boiler. This furnace is fed from coal magazines placed on each side, at the bottom of which are coking plates against which inclined grates rest. Coal is pushed out over the coking plate and travels down the grates toward a clinker grinder which removes the ashes. Sectional views of the furnace are shown and a number of installations are illustrated.

Milling Machines.—Garvin Machine Company, Spring and Varick streets, New York City. International catalogue, edition C; 6 x 9 in.; 96 pages. Gives descriptions in English, German and French of the company's various types of universal and plain milling machines, automatic slot milling attachment, motor-driven milling machines, vertical milling machines, hand milling machines, die slotting machines, universal cutter and tool grinders, dividing heads, vertical spindle attachments, and a milling machine vise.

Power Transmission Appliances.—Oneida Steel Pulley Company, Oneida, N. Y. Catalogue No. 3; 6 x 9 in.; 121 pages. Contains illustrations, descriptions, and prices of the company's various types of wood, iron and steel, and steel center wood rim pulleys, and also shaft hangers, oiling boxes, countershafts, ball and socket hangers, post hangers and boxes, pillow blocks, wall frames, couplings, belt tighteners, belting, clutches, &c. Tables of weights, dimensions, and considerable data of practical utility are included. An inclosed folder shows an Oneida steel split pulley 80 in. in diameter by 24 in. face.

Boring Mill Accessories.—Bullard Machine Tool Company, Bridgeport, Conn. Catalogue E 14; 6 x 9 in.; 67 pages. This is somewhat of a novelty in trade publications in that it is devoted to boring mill accessories. It aims to show the users of the company's vertical boring and turning mills, how to realize their full producing capacity by providing adequate tool equipment. The accessories illustrated include boring, thread-cutting, chasing and combination boring and reaming bars, core drills, reamers, tool holders, standard boring mill tools, bushings, collets, standard tool equipments, &c., and face plate and table adjuncts, such as jacks, chucks, chuck jaws, &c.

Boiler Feed Regulator and Pump Governor.—American Boiler Economy Company, North American Building, Philadelphia, Pa. Catalogue. Describes the Copes boiler feed regulator and the Copes pump governor. The former operates by the expansion of a composition-metal tube with changes of temperature, which opens a check valve in the feed line when the water in the boiler is below the desired level. A weight closes the valve through a toggle joint when the required level is reached. The Copes pump governor consists of a throttling valve placed in the pump steam line and controlled by a piston one side of which is acted upon by the pressure of the water from the pump discharge tending to close the valve, while steam pressure from the boiler acts on the other side, tending to open the valve. A counterweight is so adjusted that the valve will just seat when the feed line pressure is at a predetermined excess over the boiler pressure.

Boring, Drilling and Milling Machines.—Lucas Machine Tool Company, Cleveland, Ohio. Leaflets entitled "The Mathematical Cook" and "The Nightingale," referring to the Lucas Precision boring, turning and milling machine.

Presses.—Ferracut Machine Company, Bridgeton, N. J. Folder. Briefly describes some of the company's stamping, drawing, embossing and punching presses.

Machine Tools.—Garvin Machine Company, Spring and Varick streets, New York. Catalogue; edition F; 4 x 6 in.; 96 pages. Devoted to hand lathes, grinders, milling machine tools and attachments, screw machine tools and attachments, pulleys and countershafts. A large part of this book is given over to illustrations and descriptions of the various attachments, with tables and other information covering their use.

Bond Wire Protectors.—Railway Specialty & Supply Company, Chicago, Ill. Bulletin S-1127. Describes a new device intended to prevent vibration in bond wires and hold them out of the way of tools used in working on railroad tracks. The device consists of a hook which is secured by the track bolt and which holds the wires well up on the angle bar away from the rail bolt.

Centrifugal Fans.—Jeffrey Mfg. Company, Columbus, Ohio. Leaflet. Describes fans adaptable for mine ventilation, special features of which are concave curved vanes which discharge the air in a radial direction, and conical scoops which it is claimed prevent the gushing of air from the inlet. There is a table of tests and information necessary for making inquiries.

Welding Apparatus.—Goldschmidt Thermit Company, 90 West street, New York. Folder. Shows method of welding broken motor castings by the Thermit process.

Foundry Flasks.—Brass Founders Supply Company, 20 Prospect street, Newark, N. J. Pamphlet. Illustrates interchangeable flasks, which it is claimed are lighter than the average and therefore more easy for workmen to handle.

Crank Shafts and Connecting Rods.—Standard Connecting Rod Company, Beaver Falls, Pa. Booklet. Devoted to finished crank shafts, connecting rods and valve stems. Contains a series of illustrations showing the process by which a crank shaft is made and illustrates several types of shafts.

Steam Heating System.—Warren, Webster & Co., Camden, N. J. Part V of general catalogue. Concerns the Webster system of steam circulation for heating and contains a comprehensive description of the system, accompanied by an illustration showing the relation of the various parts and in particular the Webster specialties. The discussion of principles of operation and advantages is instructive.

Automatic Drop Lifter.—Miner & Peck Mfg. Company, New Haven, Conn. Leaflet. Gives directions for ordering Peck's automatic drop lifter and line cuts of the various sections of the appliance.

Lifting Magnets.—Electric Controller & Supply Company, Cleveland, Ohio. Catalogue. A number of the latest types of magnets are shown in use in large plants where iron and steel are handled. There are numerous illustrations of installations, including some powerful magnets lifting ingots, scrap iron and steel, rail butts and billets, &c. A detailed drawing showing the method of operating the magnets as hoists and loaders is given and some interesting data regarding the varied uses to which they can be applied.

Engine Lathes.—Lodge & Shipley Machine Tool Company, 3055 Colerain avenue, Cincinnati, Ohio. Catalogue S; 6 x 9 in.; 107 pages. A description of the special features of the company's patent head, screw cutting engine lathes is followed with specifications and full page illustrations of the 14 to 48 in. standard lathes, and the 36 and 42 in. massive patterns. Similarly the cone headstock lathes are covered. The remainder deals with motor drive, turrets and accessories which can be supplied for all standard engine lathes. An 18 in. x 8 ft. turret chucking lathe is also shown.

Threading and Cutting Machines.—Standard Engineering Company, Ellwood City, Pa. Two circulars. One pertains to the standard mill-type 6-in. pipe threading and cutting machine with expansion ring dies, for 1 1/4 in. to 6 in. pipe, and the other to the standard Wieland 8-in. pipe threader and cutter, with adjustable expanding chasers for 2 1/2 in. to 8 in. pipe.

Pin and Block Wire Joints.—Railway Specialty & Supply Company, Chicago, Ill. Bulletin No. S-2117. Refers to the Rapid pin and block wire joint which has been perfected to replace soldered joints, and consists of a pin with two or more grooves, according to the wires to be connected, and a block of cold rolled steel, drilled to accommodate the pin and wires when driven home.

Steam Traps.—Consolidated Mfg. & Supply Company, Fulton Building, Pittsburgh, Pa. Circular. Illustrates and describes the operation of the Vance steam traps, which are made in 1/4, 1, 1 1/4, 1 1/2 and 2 in. sizes.

Drop Forgings.—Park Drop Forge Company, East Seventy-ninth street and Gordon Park, Cleveland, Ohio. Two pamphlets. These are entitled, "Short Stories About Steel." One treats of the early history of iron making in England, and the kinds of steel used in modern drop forgings. The stories in the other are of Dud Dudley and the invention of smelting with coal, and common elements found in steel.

Transformers.—Wagner Electric Mfg. Company, St. Louis, Mo. Bulletin No. 78. Deals with Wagner transformers, which are made for all purposes, all frequencies of supply service and all transformation voltages. Installations are shown and tables of weights, capacities, &c., are included.

Generators and Motors.—Sprague Electric Company, 527 West Thirty-fourth street, New York. Three bulletins. No. 107 describes the construction and use of the continuous current direct driven type S generators, with illustrations of parts and completed installations. They are especially designed for hotels, office buildings and apartment houses. No. 224 (second

edition) describes type D direct current motors, which are made in nine sizes, ranging from 10 to 90 hp. for standard slow speeds, and from 15 to 105 hp. for moderate speeds. Parts are illustrated and motors are shown in operation in various plants. No. 310 covers the application of the company's round type direct current bipolar and multipolar motors to the driving of fans and blowers; the former are particularly adaptable to small ventilating systems and are made in sizes up to $7\frac{1}{2}$ hp., while the multipolar motors range from 10 to 105 hp. and are adaptable for large blowers.

Alloys for Steel.—George G. Blackwell, Sons & Co., Ltd., Liverpool, Eng. Pamphlet. Size 4 x 5 $\frac{1}{4}$ in. Fifth edition. Discusses the uses and properties of ferrochromium, ferrotungsten, ferromolybdenum and other electric furnace ferroalloys.

High Speed Steel.—Firth-Sterling Steel Company, McKeansport, Pa. Pocket size catalogue, 3 $\frac{1}{2}$ x 6 $\frac{1}{4}$ in.; pages 63. Prominence is given to Blue Chip high speed steel and to special tool steels, large stocks being carried by E. S. Jackman & Co., agents, Chicago. A view is given of Blue Chip hardening department at the Chicago warehouse. The chloride of barium process for treating taps, formed tools and others is illustrated. A graphite crucible is placed in a cylindrical gas or oil furnace, and the top is sealed so that gas of the furnace cannot reach the bath. The crucible is filled with barium chloride to which about 2 per cent. of soda ash is added.

Propeller Wheels.—Michigan Wheel Company, Grand Rapids, Mich. Catalogue G. issue 1908; 32 pages. Describes a complete line of propeller blades, reverse gears and accessories for motor boats. A number of types and patterns of propeller blades are shown, including a reversible propeller which controls the boat by changing the pitch of blades from full speed ahead to neutral, or to full pitch back for reversing or backing up. Another specialty noted is the Michigan weedless speed propeller, which it is claimed will not catch weeds of any kind, but owing to its peculiar shape allows the weeds to work off the ends of the blades. Particular attention is called to the Michigan special universal joint.

Flexible Steel Armored Hose.—Sprague Electric Company, 527 West Thirty-fourth street, New York. Bulletin No. 507. Refers to armored hose for steam or compressed air, and illustrates some special hose fittings. Views are given showing the hose as used to supply pneumatic drills and transmit steam.

Meters.—Westinghouse Electric & Mfg. Company, Pittsburgh, Pa. Circular No. 1104; 53 pages. Treats of portable and precision meters, showing the various types, with detailed drawings of their construction and tables of standard capacity.

Machine Tools.—The Miami Valley Machine Tool Company, Dayton, Ohio. Booklet. Briefly describes the company's standard lathes and sensitive drills, illustrating a 13 $\frac{1}{2}$ -in. lathe, a 14-in. drill and attachments.

Terra Cotta Building Blocks.—Henry Maurer & Son, 420 East Twenty-third street, New York. Catalogue; 6 x 9 in.; 54 pages. Devoted to Herculean arch and Phoenix wall blocks. Some buildings constructed of this material are shown and various shapes and sizes of building blocks are illustrated.

Roller Bearings.—Hyatt Roller Bearing Company, Newark, N. J. Bulletin No. 31. Devoted to the Hyatt roller bearings, which have been standardized in over 300 sizes, each providing for different conditions of speed and load. Each bearing described or quoted has a capacity rating, and useful tables covering these conditions are given. An interesting introduction reviewing the development of the anti-friction problem is given, and some of the more important bearings are illustrated.

Chain Blocks and Portable Vises.—Schuchart & Schutte, 136 Liberty street, New York. Two circulars. One describes the Atlas worm gear chain blocks with automatic brakes, which are made in sizes up to 10 tons capacity. Several illustrations demonstrate the principal features of the block, which it is claimed is particularly adaptable for outside erection purposes. The other circular shows the Pioneer portable bench and pipe vises, which are mounted on a folding frame with a platform on which the workman stands to hold it firm. The whole contrivance can be folded compactly and easily carried about.

Electrical Equipment.—Fort Wayne Electric Works, Fort Wayne, Ind. Bulletins Nos. 1102 and 1103, to supersede 1088 and 1099, respectively. No. 1102 gives a list of plants operating direct current direct connected generators, types MP and MPL. These are built in sizes ranging from 4 to 1000 kw. No. 1103 discusses the Wood alternating current arc lighting systems and illustrates and describes the apparatus employed—constant current regulator, constant potential transformer, high tension switchboard, constant current alternating current arc lamps and horn type lightning arresters. These bulletins are accompanied by a bulletin index to supersede that dated January 1, 1907.

Portable Heaters.—Rockwell Engineering Company, 26 Cortlandt street, New York. Folder. Advocates an oil fuel heater for heating work that is too bulky or inconvenient to move to a furnace. It is particularly adaptable for annealing, hardening, expanding, bending, brazing, &c. Two types are made, one is self-contained and burns kerosene only, and the

other requires a source of compressed air and burns either crude or refined oil.

Iron and Steel Tubular Poles.—Pittsburgh Pole & Forge Company, Pittsburgh, Pa. Catalogue. Illustrates a number of types of poles for electric wires, trolley poles and insulator pins, and gives price-lists. Also contains illustrations of rail benders, car forgings, &c., made by the company. A smaller circular refers exclusively to rail benders.

Adjustable Reamers.—William J. Smith Company, New Haven, Conn. Circular. Pertains to the One-Lock adjustable reamer, which was described in *The Iron Age* October 3, 1907. It consists of only three parts besides the blades—a shell, cam bolt and lock nut. The shell is bored and slotted to receive the cam bolt, and the blades have an angular sleeve to engage and lock the blades to their adjusted position.

Switchboard Instruments.—Weston Electrical Instrument Company, Newark, N. J. Two folders. These treat respectively of the new Weston alternating current switchboard volt meters and ammeters and the Eclipse direct current volt meters and ammeters.

Electrical Apparatus.—Crocker-Wheeler Company, Amherst, N. J. Four bulletins. No. 91 treats of induction motor panels; No. 92 of combined generator and feeder panels; No. 93 of small engine type direct current generators, and No. 94 of alternating current switchboard panels. All bulletins are illustrated and comprehensive drawings are shown clearly explaining the various apparatus.

Hydraulic Valves.—Dewhurst's Engineering Company, Ltd., Sheffield, England. Catalogue. Principally composed of drawings of hydraulic working valves. These are made to work up to a pressure of 5 tons per square inch, and several advantages are claimed.

Slag Ladles and Cars.—Dewhurst's Engineering Company, Sheffield, England. Bulletin. Shows types of Dewhurst side tipping and end tipping slag ladles and cars for use in steel works. These ladles are tipped by the pull of a locomotive on a tipping chain. They are made in sizes up to 15 tons capacity. The carriages are fitted with roller bearings.

Lubricator Boxes and Lubricants.—Olney & Warrin, 66-68 Centre street, New York. Folder. Pertains to the Howard lubricator box and Howard grease. The lubricator box is illustrated and it is claimed for the grease that it will not harden in the coldest temperature or liquefy at a temperature of 225 degrees.

Electrical Apparatus.—General Electric Company, Schenectady, N. Y. Nine bulletins. No. 4544, superseding No. 4387, treats of continuous current railroad switchboards. No. 4555 describes the application of electric drive to cement plants. No. 4556 explains the series luminous arc rectifier system. No. 4557 gives details of K-34, K-35 and K-36 controllers. No. 4558, superseding No. 4435, treats of the company's standard line of isolated plant switchboard panels with circuit breakers. No. 4559 describes direct current motor starting devices, rheostats and panels. No. 4562 shows mill type motors made to meet the demand for electrical motors for driving rolling mills, &c. No. 4563 shows switchboard indicators, type SI-104. No. 4564 is devoted to centrifugal air compressors for industrial air blast and exhauster service.

Thor Motorcycle.—Aurora Automatic Machinery Company, Aurora, Ill.; sales office, Chicago, Ill. Catalogue; 12 pages. Describes the Thor Motorcycle, the various parts of which are illustrated with clear engravings, which give an intelligent idea of their construction and operation. These machines, which have been on the market for the last six years, have been steadily improved and represent the forward strides that have been made in that time in vehicles of this type.

In the description in these columns April 16 of the catalogue issued by the Kilgore-Peteler Company, the address was incorrectly given. The company is located at Minneapolis, Minn.

A Maximum of Idle Cars in Mid-April.—The American Railway Association's report of the number of idle cars in the United States and Canada on April 15, published last week, shows a total of 375,624, as compared with 306,979 on April 1, 296,035 on March 18 and 342,828 on February 5. There was a net shortage of 86,811 cars on October 30, 1907. Of the increase in idle cars between April 1 and April 15, about 40,000 was in coal cars, 26,500 in box cars and 3000 in miscellaneous kinds. Idle flat cars fell off from 24,657 on April 1 to 23,804 on April 15.

The Youngstown Iron & Steel Roofing Company, Youngstown, Ohio, is now operating five hot sheet mills in its plant and reports the outlook as somewhat improved.

Pig Iron Production Declining.

Steel Works Furnaces Losing Ground.

Merchant Furnaces Gaining.

The returns from the pig iron producers show that the output for April was 1,148,691 tons, as compared with 1,228,204 tons in March, the falling off being due entirely to the steel works plants, whose daily production declined from 27,145 tons in March to 24,185 tons in April, while the merchant furnaces increased from 12,474 tons in March to 14,104 tons in April. The capacity operating on May 1 is lower than that of April 1, the figures being 262,857 tons per week at the former date, as compared with 264,890 tons on April 1.

Below is given a statement of the daily output of steel works and merchant furnaces for the past four months:

Daily Rate of Production.—Gross Tons.

	Steel works.	Merchant.	Total.
January	21,432	12,286	33,718
February	25,717	11,446	37,163
March	27,145	12,474	39,619
April	24,185	14,104	38,289

The table below gives the production of coke and anthracite furnaces in April and the four months preceding:

Monthly Pig Iron Production—Gross Tons.

	Dec.	Jan.	Feb.	March.	April.
	(31 days)	(31 days)	(29 days)	(31 days)	(30 days)
New York...	86,993	82,962	65,567	49,231	62,263
New Jersey...	22,555	22,447	19,880	23,243	22,701
Lehigh Valley	54,881	47,538	39,732	39,105	28,919
Schuylkill Val.	37,747	24,002	22,338	29,104	28,654
Lower Susquehanna and Lebanon Val.	31,090	20,323	19,363	23,907	27,393
Pittsburgh Dis.	258,412	304,521	324,418	325,953	276,883
Shenango Val.	76,086	69,149	68,919	76,377	71,970
West. Penn...	105,671	60,355	51,283	62,782	54,221
Md., Va., and Kentucky...	61,433	30,621	27,775	41,452	48,955
Wheeling Dis.	12,051	0	12,961	18,988	17,930
Mahoning Val.	68,776	64,437	93,332	105,310	94,780
Central and North. Ohio.	84,087	52,297	75,137	94,952	88,047
Hocking Valley and Hanging Rock	15,658	8,404	12,296	20,108	19,132
Mich., Minn., Mo., Wis., Colo...	48,950	38,172	36,129	39,327	36,808
Chicago Dis.	148,091	120,874	99,289	147,014	157,633
Alabama....	94,810	81,541	91,209	114,295	94,754
Tennessee, Georgia and Texas....	26,388	17,607	18,112	17,056	17,648
Totals	1,234,279	1,045,250	1,077,740	1,228,204	1,148,691

Production of Steel Companies.

Returns from all the plants of the United States Steel Corporation, the Cambria, Pennsylvania, Maryland, Lackawanna, Wheeling, Republic, Youngstown Sheet & Tube Company, Jones & Laughlin, La Belle, Bethlehem, Calumet, Inland, Colorado and Tennessee (Ensley) companies show the following totals of product month by month. We give separately a statement of the output of spiegel-eisen and ferromanganese, which is included for each month in the total production:

Production of Steel Companies.—Gross Tons.

	Pig.—Total production.	Spiegeleisen and ferromanganese.
January	1,358,015	1,406,397
February	1,226,760	1,317,923
March	1,400,395	1,424,827
April	1,333,591	1,446,788
May	1,372,423	1,470,080
June	1,293,437	1,457,230
July	1,323,391	1,452,557
August	1,237,482	1,445,685
September	1,264,380	1,417,153
October	1,452,200	1,514,521
November	1,411,350	1,084,114
December	1,445,528	659,459

It has become a very difficult matter to estimate blast furnace capacity in the case of some of the large groups because of the frequent banking and blowing out, so that the number in blast on one particular date does not give any fair indication of coming product. Thus of one group of furnaces three were in blast, both on March 1 and on April 1, the March product being 33,838 tons. On May 1 only two furnaces were in operation, and yet the April product ran up to 47,276 tons, or nearly 50 per cent. larger, in spite of a lessened number of stacks in operation. At some plants the practice has been adopted of banking toward the end of the week, and if the first of

the month happens to fall into that period the furnaces are technically inactive. Yet they start up on the following Monday and turn out nearly full output during the month.

For the great majority of furnace plants, which in the aggregate make the greater part of the output, the production is so regular that the output for the coming month can be predicted very closely, barring accidents. Still, under the prevailing extraordinary conditions, capacity statistics based upon the number of stacks in operation are not as accurate a guide of current make as they usually are.

Capacity Active May 1 and April 1.

The table below gives the weekly capacity of coke and anthracite furnaces in blast May 1 and April 1:

Coke and Anthracite Furnaces in Blast.

Location of furnaces.	Total number of stacks.	May 1.		April 1.	
		Number in blast.	Capacity per week.	Number in blast.	Capacity per week.
New York:					
Buffalo	14	7	13,291	5	10,598
Other New York	10	1	1,237	2	2,751
New Jersey	8	4	5,297	4	5,245
Spiegel	2	0	0	0	0
Pennsylvania:					
Lehigh Valley	25	8	6,612	8	8,232
Spiegel	3	1	136	1	142
Schuylkill Valley	14	4	5,487	5	6,041
Spiegel	1	0	0	1	755
Lower Susquehanna	7	2	3,610	2	2,854
Spiegel	1	0	0	0	0
Lebanon Valley	10	4	3,199	3	2,584
Pittsburgh District	45	22	69,150	21	58,491
Spiegel	3	1	768	2	1,274
Shenango Valley	20	5	12,584	8	18,062
West. Pennsylvania	27	8	12,435	9	14,175
Maryland	4	2	4,126	2	8,618
Wheeling District	14	2	4,184	2	4,287
Ohio:					
Mahoning Valley	18	9	21,026	10	23,258
Central and North.					
Michigan	22	8	21,669	8	22,456
Hocking Valley and Hanging Rock	12	6	4,464	6	4,542
Illinois and Indiana	23	13	36,781	13	33,082
Spiegel	2	1	1,379	1	903
Minnesota	1	0	0	0	0
Wisconsin	6	1	1,400	2	2,611
Missouri	1	0	0	0	0
Colorado	6	0	0	3	6,003
The South:					
Virginia	23	9	6,470	8	6,923
Kentucky	7	1	972	1	1,155
Alabama	46	16	22,444	16	21,340
Tennessee	18	7	4,138	7	4,320
Georgia and Texas	3	0	0	0	0
Totals	396	142	262,857	150	264,890

A Record of Active Capacity.

The active weekly capacity in coke and anthracite iron has shown the following fluctuations since January 1, 1903:

	Capacity per week.	Capacity per week.	
May 1	262,857	August 1	410,088
April 1	264,890	July 1	408,617
March 1	267,437	June 1	443,092
February 1	241,925	May 1	452,031
January 1, 1908	232,652	April 1	439,564
December 1, 1907	347,372	March 1	403,157
November 1	491,436	February 1	405,792
October 1	511,397	January 1, 1905	377,879
September 1	507,768	December 1, 1904	357,846
August 1	513,471	November 1	334,249
July 1	528,170	October 1	319,249
June 1	523,220	September 1	291,573
May 1	524,538	August 1	246,092
April 1	496,456	July 1	272,301
March 1	511,035	June 1	336,107
February 1	492,359	May 1	368,244
January 1, 1907	507,397	April 1	337,257
December 1, 1906	513,860	March 1	308,751
November 1	500,580	February 1	273,692
October 1	469,665	January 1, 1904	185,636
September 1	441,426	December 1, 1903	244,156
August 1	449,908	November 1	273,715
July 1	460,570	October 1	353,142
June 1	472,622	September 1	360,197
May 1	484,031	August 1	353,681
April 1	484,240	July 1	384,825
March 1	479,737	June 1	388,178
February 1	482,156	May 1	373,496
January 1, 1906	463,673	April 1	386,215
December 1, 1905	475,814	March 1	347,424
November 1	460,449	February 1	335,239
October 1	445,468	January 1, 1903	346,073
September 1	412,563		

Furnaces In and Out.

During April there were blown in B Buffalo, No. 2 Buffalo & Susquehanna, three Edgar Thomson, Saxton No. 2, Sheridan, Ivanhoe in Virginia, Detroit, No. 1 Gadsden and the new No. 2 Vanderbilt in Alabama.

There were blown out No. 1 Buffalo & Susquehanna, Genesee, Tidewater Steel, one Warwick, one Duquesne, one Edgar Thomson, Alice and South Sharon in the Shenango Valley, Josephine, Cleveland, B Mayville, No. 1 Vanderbilt and Philadelphia in Alabama. There were banked on May 1, Hall in the Shenango Valley and

Haselton. It is reported that Midland and Mattie furnaces are to blow out soon, while Struthers furnace has just started in on basic iron.

NEWS OF THE WORKS.

Iron and Steel.

The No. 1 Vanderbilt Furnace of the Birmingham Coal & Iron Company, Boyles, Ala., was banked April 27, so that connections could be made to the new No. 2 furnace. The latter was blown in a few days later. Furnace No. 1 will remain banked for some time.

The blast furnace of the Detroit Iron & Steel Company, Detroit, Mich., was blown in April 6, having been idle since December 13, 1907.

The No. 1 furnace of the Buffalo & Susquehanna Iron Company, Buffalo, N. Y., was blown out April 22 for relining. The No. 2 furnace was put in blast April 14 after relining.

The blast furnace of the Nittany Iron Company, Bellefonte, Pa., was banked April 13.

The blast furnace of the Ivanhoe Furnace Company, Ivanhoe, Va., was blown in April 16, having been idle since December 1, 1907.

Mattie Furnace of the Girard Iron Company, Girard, Ohio, is expected to blow out some time this month.

The No. 1 furnace of the Alabama Consolidated Coal & Iron Company, at Gadsden, Ala., was blown in April 14. The No. 2 furnace is still idle.

The one South Sharon Furnace of the Carnegie Steel Company which has been in blast for several months was blown out April 25.

The Algoma Steel Company of the Lake Superior Corporation, Sault Ste. Marie, Ont., is reported to have blown out its furnace No. 1. Furnace No. 2 is expected to go out this week.

The Canadian Steel Rolling Mills, Ltd., Campbellford, Ont., which is to construct a new plant at that place, has incorporated with a capital stock of \$100,000.

Monongahela furnaces Nos. 1 and 4 of the National Tube Company, at McKeesport, Pa., were in operation during the entire month of April, while Nos. 2 and 3 stacks were idle.

The new No. 1 stack of the Shenango Furnace Company at Sharpsville, Pa., is about ready for blast and will be put in operation just as soon as the condition of the pig iron market warrants. The furnace will be equipped with an automatic skip hoist, which is being installed by the Brown Hoisting Machinery Company, Cleveland, Ohio.

On April 17 two more of the Edgar Thomson furnaces of the Carnegie Steel Company were put in blast, making five furnaces at this plant in operation at present and five stacks idle. Two of the Carrie stacks of the Carnegie Steel Company at Rankin were blown out on May 1, leaving three stacks in blast and four idle.

The plant of the Portsmouth Steel Company at Portsmouth, Ohio, has started up to partial capacity, after being closed for some time. The blooming and plate mills will run single time and the jobbing mill double turn. The company has a fair amount of orders ahead.

The furnace of the Struthers Furnace Company, Struthers, Ohio, which has been shut down since the middle of December, will go into blast this week on basic iron.

No. 1 City furnace of the Sloss-Sheffield Steel & Iron Company, Birmingham, Ala., has been put in blast, after having been banked since November 28.

At a meeting of the principal unsecured creditors of the New York State Steel Company, Buffalo, N. Y., the offer of the Pennsylvania capitalists to advance \$500,000 to take over a controlling interest in the company and complete the plant, was withdrawn. Several plans for reorganizing the company have been advanced, but none has been carried out. It has been agreed to return to Corrigan, McKinney & Co., Cleveland, Ohio, \$117,000 worth of ore bought by the company and unused. It was also agreed that the unsecured creditors should receive a payment of \$25,000 on their claims, and that the bondholders should receive a payment of \$75,000 instead of \$300,000, in satisfaction of their present claims, pending a full adjustment of the situation.

General Machinery.

The Stecker Electric & Machine Company, 30-32 Larned street East, Detroit, Mich., is preparing to erect a new factory building near Woodbridge and Bates streets. The new building will be 50 x 91 ft. of stone and brick construction, and the company's urgent need of larger quarters will hasten the work of construction. The new factory will be equipped with motor drive throughout and is designed to be modern and complete in every respect.

The Republic Mfg. Company, Grant avenue and Boquet street, N. S., Pittsburgh, has recently completed arrangements with L. Weiscope, New York, to install special machinery in its plants.

and to hereafter manufacture machinery for filling bottles with liquids such as are used in packing establishments. The company carries on a general machine business and has equipment for manufacturing contract work for the Government, of which it has handled considerable in the past. It reports business to be improving.

The frame erecting shop of the Lloyd-Booth plant of the United Engineering & Foundry Company, at Youngstown, Ohio, is being replaced by a brick and steel structure, which will increase the capacity about 40 per cent. A new 30-ton electric traveling crane will be installed in this department.

Power Plant Equipment.

The Pittsburgh Valve, Foundry & Construction Company, Twenty-sixth street and Railroad avenue, Pittsburgh, manufacturer of complete piping equipment for power and industrial plants, has received a large contract for steam and exhaust piping, valves and fittings, in various sizes up to 18 in., for heaters, pumps, &c., for the plant of the Vesta Coal Company, California, Pa. The company is also furnishing six 48-in. and 16 28-in. of its gate valves for use on condensers in the Ohio Works of the Carnegie Steel Company, Youngstown, Ohio.

Bids will be received at an early date by the Board of Village Trustees, Germantown, Ill., for the installation of a water works plant, the estimated cost of which is \$8000.

The Board of Light and Power Commissioners, Marquette, Mich., has authorized the preparation of plans and specifications for the construction of a new substation for the present electric system. It is probable that the new building will be of cement construction.

A bond issue of \$196,000 has been authorized by the City of Jackson, Miss., for the purpose of making extensions and betterments to the city water works plant and other municipal improvements. In accordance with the provisions of the ordinance it is expected bonds will be issued at a meeting of the City Council to be held May 5.

The Jasper Water, Light & Power Company, Jasper, Ala., has in contemplation some plant extensions and improvements, plans for which have as yet not been fully developed. J. M. Cranford is president.

The Columbia Electric Street Railway, Light & Power Company, Columbia, S. C., has under consideration the installation of a 1000 kw. generator and other electrical machinery in its power plant.

The Westinghouse Machine Company, Pittsburgh, Pa., has recently booked a number of important orders for steam turbines and gas engines for shipment to Japan. In addition to those previously noted, equipment has been ordered by the Acadia Sugar Refining Company and others.

A fund of \$120,000 has been provided by the sale of bonds for the establishment of a water works at Roswell, N. M. Plans for this installation have been prepared by Burns & McDonnell, Scarritt Building, Kansas City, Mo., and bids on the necessary equipment and construction work will be received May 22.

The installation of an electric power plant is being planned by the Ethel Mining Company, Nevada City, Cal., but it is stated that the work will not go forward until about July 1 next. A. Maitman is superintendent.

The City of Gadsden, Ala., has appropriated \$100,000 for the construction of a water works system, the plans for which are now being prepared by James Nisbet Hazlehurst, Atlanta, Ga. The system will consist of a complete pumping plant, coagulating basin, filters, &c. Contracts will probably be let within the next 60 days.

Plant improvements contemplated by the Manitowoc Water Works Company, Manitowoc, Wis., include the installation of a new boiler, which is now under construction, the laying of additional cast iron pipe mains, and the probable building of a concrete reservoir with a capacity of between 500,000 and 750,000 gal. T. W. Gray is secretary.

The Hewes & Phillips Iron Works, Newark, N. J., is building a 1000-hp. engine for the National India Rubber Company, Bristol, R. I., and is installing in the same works three additional engines, aggregating about 1000 hp., together with three Crocker-Wheeler generators to be used in lighting and supplying power to the part of the plant where the small machinery is operated. The company reports a good demand for its products, and since the first of February has booked the following orders: Odell Mfg. Company, Groveton, N. J., two tandem compound engines aggregating 1400 hp.; Windham Mfg. Company, Willimantic, Conn., 1000 hp. engine, 500 hp. of boilers, 100 hp. generator; Solvay Process Company, Syracuse, N. Y., six pumping engines, and engines for the Standard Oil Company, Constable Hook, N. J.; Simpson-Crawford Company, and several local companies.

John D. Thompson, Wilmington, Del., is preparing plans for a power plant to be constructed at St. Georges for the Diamond State Rapid Transit Company, Smyrna, Del.

The Erie Forge Company, Erie, Pa., will resume work at once on its new one and two story power plant, 46 x 189 ft., which is to be of concrete block and steel construction.

The city of Cleveland, Ohio, has awarded to the Westing-

house Machine Company, Pittsburgh, Pa., for \$34,725, the contract for a 1000-kw. turbine for the municipal lighting plant at South Brooklyn.

Foundries.

The Dutcher Company, Milwaukee, Wis., successor to the J. E. & P. E. Dutcher Company, manufacturer of steel castings, has made an assignment, with liabilities of about \$100,000 and assets \$150,000. The company's plant is one of the oldest in the city, and recently a large part of it was rebuilt. It did a good business, but suffered by reason of the molders' strike and the financial stringency last fall.

Fires.

The plant of the Milton Mfg. Company, Milton, Pa., was burned April 23, the loss being about \$100,000. It is reported that works will be rebuilt as soon as possible.

The substation of the West Kootenay Power & Light Company and the municipal power plant at Nelson, B. C., were destroyed by fire April 25, the loss being about \$50,000.

The plant of the Hubley Mfg. Company, Lancaster, Pa., was damaged \$50,000 by fire April 22.

The foundry and pattern shop of Smith & Loughlin, Driggs Avenue, Brooklyn, N. Y., was burned April 24, the loss being estimated at \$50,000.

On April 20 fire damaged the plant of the Minneapolis Steel & Machinery Company, Minneapolis, Minn., to the extent of \$25,000.

Hardware.

The National Projectile Works, Grand Rapids, Mich., has just been reorganized at Ontario, Cal., with a capital stock of \$100,000, \$80,000 of which has been paid in in cash and special machinery. The new company owns a factory building between the Southern Pacific and Salt Lake railroads, and expects to be in a position by the first of August to turn out all kinds of rifle ammunition under patents owned by the company for making lubricated wire patched bullets, which have been tried out at the experimental factory at Grand Rapids. The officers of the new company are: President, H. E. Swan; vice-president, S. G. Berger; treasurer, E. V. Caldwell; secretary and general manager, D. H. Armstrong.

The stockholders of the Union Steel Screw Company, Cleveland, Ohio, at a special meeting held April 30, ratified the proposal to merge with the National Screw & Tack Company, Cleveland. Under the terms of the consolidation the latter company acquires the plant of the former for \$461,125, payment to be made in 6 per cent preferred stock of the National. This liquidates the \$542,500 stock of the Union company at \$85 a share. The National Screw & Tack Company will increase its capitalization from \$1,000,000 to \$1,461,000. The plant of the Union company will continue in operation.

The plant of the American Bolt Company, Birmingham, Ala., has been put in operation after an idleness of some months.

Miscellaneous.

The Guthrie Iron & Metal Company, Guthrie, Okla., incorporated with a capital stock of \$5000, has been organized to deal in scrap iron, metals and junk. The incorporators are N. H. Bunis, William Copeland, J. H. Millam, L. C. Gurney and R. Edmunds.

George E. Leonard has been appointed receiver for the Hendrick Hudson Iron & Steel Works, New York.

The proposed consolidation of the business of William H. Bristol and the Bristol Company, Waterbury, Conn., as outlined in these columns several weeks ago, has been effected. The result of this combination makes the Bristol Company manufacturer of the largest and most complete line of recording instruments for pressure, temperature and electricity.

The Brooklyn Union Gas Company, Brooklyn, N. Y., which is to construct a new meter repair shop, does not expect to install any new machinery, as the equipment in the present shop will be transferred to the new building.

The Pennsylvania Steel Pulley Company, North Side, Pittsburgh, closed its plant on March 15 to install additional machinery, but on account of receiving some very good specifications for Keystone steel pulleys the plant was started up April 27 and is now running full capacity. The company reports an exceptionally large amount of orders for pulleys booked during April.

The Glacier Metal Company, Richmond, Va., intends to erect a new plant about 40 x 100 ft., two stories, in Manchester, across the James River from Richmond. The new plant will be equipped for the manufacture of the Glacier antifriction metal, which is known throughout the world; copper tin bearing metal and other Babbitt metals, and will have a capacity of about 25,000 lb. of metal per day.

S. F. Bowser & Co., Fort Wayne, Ind., have issued \$300,000 of preferred stock to increase their working capital. In the reference to this company in these columns last week the name was printed incorrectly.

The Scott National Radiator Company, which has changed its name to the Scott Stove & Furnace Company, is located at Cambridge City, Ind., and not at Cambridge, Ohio, as was incorrectly stated in these columns last week.

New Publications.

Formulas in Gearing.—Fifth Edition. Published by the Brown & Sharpe Mfg. Company, Providence, R. I. Size, 6 x 9 in.; pages, 183. Cloth. Price, \$1.50.

Even those who are not familiar with the earlier editions of this book will infer from its title that it is not a treatise on gearing, nor does it exhaustively take up all the problems connected with them. The aim is rather to serve the draftsman's needs, giving him in a convenient form the information which is necessary in designing. It is practically a handbook for the problems met with in ordinary practice, and puts in readily accessible form the formulas and figures that enter all but the most exceptional calculations. Its usefulness is enhanced by its condensation. No attempt is made to deal with the transmission of power or the strength of gearing, and the mathematics involved requires only a knowledge of algebra and elementary trigonometry.

The nine chapters deal with the more common systems of gearing, spur, bevel, worm, spiral or screw, and internal gears with formulas for each, bevel gear cutting, indexing, lathe gearing for screw cutting, &c. More than half of the book consists of tables, including tooth parts; chordal thickness of teeth and distance from chord to top of tooth; diameter increments; angles of edge and face; cutters for bevel gears; solution of right angled triangles; natural sines, cosines, tangents and cotangents; angles for gashing worm wheels; prime numbers and factors; leads; decimal equivalents of parts of an inch, and table of data for indexing any number of divisions from 2 to 399, when using the spiral head of a Brown & Sharpe universal milling machine equipped for differential indexing. The last and the table of leads are part of the matter added since the last edition, and the subject of the differential indexing has been entirely revised. This edition is printed almost throughout from new plates.

Accidents: Their Causes and Remedies. A Treatise on the Development of Care and Faithfulness to Aid the Safeguarding of Life and Property. By Thomas D. West. Sold by the Competent Life Book Agency, Sharpsville, Pa. Paper covers; 95 pages. Price 25 cents.

This little work is dedicated "to the American Anti-Accident Association and the American Museum of Safety Devices and Industrial Hygiene, whose efforts in the interests of humanity should be assisted by every citizen who possesses any sympathy for America's great loss of life and property through accidents." It is probably the first publication of any importance designed for the specific purpose of calling attention to the desirability of inculcating greater care in the endeavor to prevent accidents which in so many instances lead to the loss of life or to serious physical injuries and damage to property. The author is intensely interested in this subject, and has for some time been conducting a campaign for increased care and caution in the various pursuits of life. He has brought together cogent arguments and incisive facts bearing on his question and has presented them in not only readable but striking shape.

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Co-Operative Education.—Mayor James McMahon of Fitchburg, Mass., and F. Fosdick, president of the Fitchburg Steam Engine Works, representing the Chamber of Commerce of that city, have been in Cincinnati investigating the scheme of co-operative education advocated by prominent members of the Cincinnati Metal Trades Association in conjunction with Dean Herman Schneider of the University of Cincinnati, engineering department. The visitors were taken on a tour of the factories in which are university students taking advantage of the recently instituted system. This co-operative system admits two youths at the same time to university study, but on alternate days, so that while one is studying in the university the other is getting a practical knowledge of shop practice and earning money as well. The visitors were so pleased with the system that they will recommend it for adoption by the Fitchburg public schools.

The Iron and Metal Trades

The decline in volume of operations at the Steel works in April, as compared with March, is reflected in the Pig Iron production reported to *The Iron Age*. The total output of the coke and anthracite furnaces last month was 1,149,000 tons in 30 days, compared with 1,228,000 tons in March, in 31 days. The decline in the daily output from 39,619 tons in March to 38,289 tons in April is due largely to the Steel works furnaces, whose product fell off from 27,145 tons to 24,185 tons daily, leaving the respective figures for the merchant furnaces at 12,474 tons and 14,104 tons. However, it must be taken into consideration that the merchant furnaces have been accumulating some Iron during the month. There has been some further decline in the active capacity, May opening with a weekly rating of 262,857 tons, as compared with 264,890 tons on April 1.

Interest centers in the meeting of the Pig Iron and Ore men in this city to-day. There is little prospect that anything tangible will be done as to prices of Pig Iron, although the organizations will probably continue for statistical purposes and an interchange of data. The Southern makers were together on Monday, but one company was not represented. The Eastern makers are holding a preliminary meeting, some being in favor of a sufficient reduction in the price to permit some metal to be marketed.

A good deal hinges on the attitude of the lake Ore selling companies who were together on Friday last. It is understood that the general feeling is against any concession in the prices. These interests are very strong, and even an increase in the offerings of Ore at concessions, now being made by second hands, would not materially affect the situation. The maintenance of Ore prices will put furnace companies who do not control their own Ore supply in a very serious position, in competition with Southern makers and with Northern stacks that melt wholly or partly Ores mined by themselves.

There has been a little more activity in Pig Iron in the Central West, buyers showing more interest as the result of widespread reports of coming sharp reductions. The markets have weakened a little more, but there is a good deal of the resistance which grows out of despair.

Among some of the melters of Foundry Iron demoralization is rampant. This is true notably of the Cast Iron Pipe industry, the largest single consumer of Pig Iron. Prices have been savagely cut, and Pipe has been sold at Western and Eastern points down to \$21.50 per net ton, delivered. The pace is getting too hot for some of the shops, however.

Structural work is coming out slowly, but in fair volume. Like in other lines contracts which at ordinary times would be given out at one letting are coming out piecemeal, which creates the impression that there is less large work than the facts warrant. The new subway, on which bids are to go in on Friday, will call for 26,000 tons of fabricated work and 13,000 tons of concrete Bars. The Harriman lines are expected soon to be in the market for 10,000 tons of bridge work, and other railroads will need a fair tonnage.

In the metal trade the price of Lead has been advanced to 4.20c., New York. Copper is quiet, and is selling at 12½c. for Electrolytic.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

PIG IRON, Per Gross Ton: May 6, Apr. 29, Apr. 1, May 1, 1908. 1908. 1908. 1907.

Foundry No. 2, Standard, Philadelphia	\$17.50	\$17.50	\$17.75	\$24.50
Foundry No. 2, Southern, Cincinnati	17.75	15.00	15.25	24.25
Foundry No. 2, Local, Chicago	17.35	17.35	17.50	26.50
Bessemer, Pittsburgh	17.00	17.15	17.75	23.85
Gray Forge, Pittsburgh	14.90	15.40	15.65	21.85
Lake Superior Charcoal, Chicago	20.00	20.00	20.50	27.00

BILLETS, &c., Per Gross Ton:

Bessemer Billets, Pittsburgh	28.00	28.00	28.00	30.50
Forging Billets, Pittsburgh	29.00	30.00	30.00	36.00
Open Hearth Billets, Phila.	29.20	29.20	29.20	32.50
Wire Rods, Pittsburgh	35.00	35.00	35.00	37.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00

OLD MATERIAL, Per Gross Ton:

Steel Rails, Melting, Chicago	12.00	12.00	12.00	18.00
Steel Rails, Melting, Phila.	12.75	12.75	12.75	19.25
Iron Rails, Chicago	14.75	15.00	15.00	24.50
Iron Rails, Philadelphia	17.00	17.00	17.00	27.25
Car Wheels, Chicago	12.50	13.00	14.50	25.00
Car Wheels, Philadelphia	14.00	14.00	14.00	24.00
Heavy Steel Scrap, Pittsburgh	12.75	12.75	13.00	18.00
Heavy Steel Scrap, Chicago	10.50	10.75	11.25	15.50
Heavy Steel Scrap, Philadelphia	12.75	12.75	12.75	18.75

FINISHED IRON AND STEEL,

Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia	1.46	1.46	1.65	1.83½
Common Iron Bars, Chicago	1.65	1.65	1.65	1.76½
Common Iron Bars, Pittsburgh	1.50	1.50	1.50	1.80
Steel Bars, Tidewater, New York	1.76	1.76	1.76	1.74½
Steel Bars, Pittsburgh	1.60	1.60	1.60	1.80
Tank Plates, Tidewater, New York	1.86	1.86	1.86	1.84½
Tank Plates, Pittsburgh	1.70	1.70	1.70	1.70
Beams, Tidewater, New York	1.86	1.86	1.86	1.84½
Beams, Pittsburgh	1.70	1.70	1.70	1.70
Angles, Tidewater, New York	1.86	1.86	1.86	1.84½
Angles, Pittsburgh	1.70	1.70	1.70	1.70
Skelp, Grooved Steel, Pittsburgh	1.55	1.55	1.70	1.85
Skelp, Sheared Steel, Pittsburgh	1.65	1.65	1.80	1.90

SHEETS, NAILS AND WIRE,

Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, No. 27, Pittsburgh	2.40	2.40	2.40	2.50
Wire Nails, Pittsburgh	2.05	2.05	2.05	2.00
Cut Nails, Pittsburgh	1.90	1.90	1.90	2.05
Barb Wire, Galv., Pittsburgh	2.50	2.50	2.50	2.45

METALS, Per Pound:

Cents.	Cents.	Cents.	Cents.	
Lake Copper, New York	12.87½	13.00	13.25	25.00
Electrolytic Copper, New York	12.62½	12.75	13.00	24.37½
Spelter, New York	4.65	4.70	4.70	6.60
Spelter, St. Louis	4.50	4.57½	4.55	6.45
Lead, New York	4.20	4.10	3.97½	6.10
Lead, St. Louis	4.10	4.00	3.80	5.92½
Tin, New York	31.05	32.25	31.25	43.05
Antimony, Hallett, New York	8.50	8.75	8.75	21.00
Nickel, New York	45.00	45.00	45.00	45.00
Tin Plate, 100 lb., New York	\$3.89	\$3.89	\$3.89	\$4.00

Chicago.

FISHER BUILDING, May 6, 1908.—(By Telegraph.)

A noteworthy development last week was a spurt of activity in Pig Iron, transactions aggregating 10,000 tons or more, comprised principally of lots of 1000 to 2000 tons. These sales included one of 2000 tons of Basic and another of 1000 tons of Malleable Bessemer, the latter being especially notable because of the exceedingly scant demand that since the beginning of the year has left this grade practically without movement. Tentative offers from consumers of tonnage at \$10 to \$11, Birmingham, are quite frequent, but no acceptances below \$11.50 are heard of and none at this price for extended delivery or of significant tonnage. With a possible radical reduction in price suggested by recent developments, buyers are not inclined to make forward commitments until a more stable level of values is established. Besides 1000 tons in miscellaneous fabricating orders booked by the American Bridge Company, the 'Frisco System placed 1000 tons of bridge material, taken by the Pennsylvania Steel Company, and the Chicago, Milwaukee & St. Paul 6000 tons of Guard Angles, the contract for which was secured by the Kenwood Bridge Company. The selection of reinforced concrete construction for two large Chicago buildings will switch the metal requirements from Structural Shapes to Steel reinforcing Bars, of which a considerable tonnage will be required. Rail orders were this week limited to one of 800 tons high T sections, taken by the Pennsylvania Steel Company. A slight improvement is noted in the demand for Plates. After a shutdown of several weeks the Sheared Plate mills will probably start up on Monday of next week. The de-

mand for Iron and Steel Bars continues quiet, the mills being able to operate only intermittently. Lettings of Cast Iron Pipe for the week aggregate over 7000 tons, the most important of which was a lot of 5000 tons for the city of St. Louis. Bids received on some of these transactions demonstrate the sharpness of competition which has reduced prices to an extremely low level. Only in Rerolling Rails does the Scrap Iron market show any vitality. Other grades are weaker, and a total of 18,000 tons of railroad material to be offered this week will bear heavily upon the market.

Pig Iron.—Not less than 10,000 tons of Iron changed hands in the past week, which was, perhaps, the most active of any like period since January. The bulk of the tonnage included in these sales was of Northern Iron. Particular interest attaches to the sale of 1000 tons of Malleable Iron, which probably exceeds the entire sales of this grade made in this market since the first of the year. The price is reported to have been close to \$17. Among other sales were 2000 tons of Basic Iron, sold by the Inland Steel Company to the Grand Crossing Tack Company, 1500 tons of Southern Foundry Iron at \$12, Birmingham, and 2000 tons of Northern Foundry at a shade under \$17, at furnace. In addition to these transactions there are inquiries for 2000 tons in the market for delivery through the second half, which will be closed in a few days if acceptable prices are offered. The persistent rumor of a probable decline in Southern Iron to a \$10, Birmingham, basis has developed a large number of tentative inquiries, which seem to indicate the willingness of important consuming interests to buy not only for present but future needs should such a recession in values take place. The expectancy of a decline to this point has been materially strengthened by the reported results of the recent New York Pig Iron conference. It is evident that a good many buyers are deferring purchases until after the second meeting, which is scheduled for May 7. At the same time this hesitancy may be attributed more to cautious conservatism than to a prevalent belief that radical action will be taken. Meanwhile, market conditions have not changed, and while a few small sales of Southern Iron have been made at \$11.75, and even as low as \$11.50, they are surrounded by circumstances and conditions that hardly warrant the acceptance of these figures as representative of the market. The following prices are for May and June delivery, f.o.b. Chicago:

Lake Superior Charcoal	.....	\$20.00 to \$20.50
Northern Coke Foundry, No. 1	.....	17.85 to 18.35
Northern Coke Foundry, No. 2	.....	17.35 to 17.85
Northern Coke Foundry, No. 3	.....	16.85 to 17.35
Northern Scotch, No. 1	.....	18.35 to 18.85
Southern Coke, No. 1	.....	16.85 to 17.35
Southern Coke, No. 2	.....	16.35 to 16.85
Southern Coke, No. 3	.....	15.85 to 16.35
Southern Coke, No. 4	.....	15.35 to 15.85
Southern Coke, No. 1 Soft	.....	16.85 to 17.35
Southern Coke, No. 2 Soft	.....	16.35 to 16.85
Southern Gray Forge	.....	14.35 to 14.85
Southern Mottled	.....	14.10 to 14.60
Malleable Bessemer	.....	17.35 to 17.85
Standard Bessemer	.....	19.50 to 19.65
Jackson Co. and Kentucky Silvery, 6%	.....	18.90 to 19.40
Jackson Co. and Kentucky Silvery, 8%	.....	20.90 to 21.40
Jackson Co. and Kentucky Silvery, 10%	.....	22.90 to 23.40

(By Mail.)

Billets and Rods.—As far as new business is concerned, the market is stagnant, there being not only no sales of any consequence, but an absence of inquiries, indicating an entire lack of interest in the market. We continue to quote Forging Billets at \$31.50 to \$32.50, Chicago, which prices, it is insisted, are being resolutely maintained by the mills. Wire Rods are not moving so freely as was the case some weeks ago, although a fair amount of business is reported at regular prices, which are as follows: Bessemer, \$35; Basic, \$36; Chain, \$37, all at Pittsburgh.

Rails and Track Supplies.—The past week has only produced in the way of new business an order for 800 tons of high T-Rails for a traction line, taken by the Pennsylvania Steel Company. The Chicago, Indianapolis & Louisville Railway is reported to be in the market for 1000 tons of Standard Rails, but the order has not yet been placed. There is not much doing in Light Rails, and what business is going is subject to sharp competition, which has resulted in considerable irregularity in prices. Some recent sales have been made of Billet Rails in competition with rerolling mills at concessions of \$4 to \$5 per ton below the regular prices. The prices herewith quoted can therefore only be considered as the nominal values of Billet Rails. The inactivity in railroad supplies is reflected by a decline of 15c. per 100 lb. on Angle Bars, prices of which are herewith revised. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c. to 1.70c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.25c. to 2.35c., base, Square Nuts, and 2.40c. to 2.50c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., \$28; 20-lb., \$29; 16-lb., \$30; 12-lb., \$31. Standard Sections, \$28, f.o.b. mill, full freight to destination.

Structural Material.—Notwithstanding the increasing number of inquiries that are coming in for estimates on various Structural projects, only a small proportion of them is developing into orders. Careful investigation of the char-

acter of this prospective business would indicate that most of the enterprises which they represent have substantial financial backing, and will sooner or later go forward to completion. The only reason assigned for delay is the expectancy of lower prices. The principal fabricating interest has bids out for at least 20,000 tons, on what is regarded as live propositions, which include several on which preliminary work of construction has already begun, although contracts for Structural Material are still withheld. A contract for 1000 tons of bridge material let by the Frisco System was taken by the Pennsylvania Steel Company, and the Kenwood Bridge Company secured 6000 tons of Guard Angles placed by the Chicago, Milwaukee & St. Paul. Reinforced concrete construction has been decided upon for the 12-story building to be erected by M. Born & Co., Chicago, the contract for which was awarded to the Alling Construction Company. This will involve the purchase of a considerable tonnage of reinforcing bars. It is also reported that the contemplated building for Spaulding & Merrick, branch of the American Tobacco Company, will likely be of concrete. Prices from store are quoted without change, at 2.05c. to 2.10c., and mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.88c.; Angles, 3 to 6 in., 1/4-in. and heavier, 1.88c.; larger than 6 in. on one or both legs, 1.98c.; Beams, larger than 15 in., 1.98c.; Zees, 3 in. and over, 1.88c.; Tees, 3 in. and over, 1.93c., in addition to the usual extras.

Plates.—The run of Plate orders for the week shows a little improvement, the principal interest having booked an aggregate of about 1200 tons. The general character of the demand, however, is unchanged, there being no buying except for actual present needs. The principal mills are generally adhering to regular prices, but some business in the narrower sizes continue to be placed at concessions of \$2 a ton. The Plate mill at the South Works, which has been idle for several weeks, is scheduled to start up next Monday. We quote mill shipments as follows: Tank Plates, 1/4-in. and heavier, wider than 6 1/4 and up to 100 in. wide, inclusive, car lots, Chicago, 1.88c. to 2.08c.; 3-16 in., 1.98c. to 2.18c.; Nos. 7 and 8 gauge, 2.03c. to 2.23c.; No. 9, 2.13c. to 2.33c.; Flange quality, in widths up to 100 in., 1.98c. to 2.08c., base, for 1/4-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.98c. to 2.18c.; Flange quality, 2.08c. Store prices on Plates are as follows: Tank Plates, 1/4-in. and heavier, up to 72 in. wide, 2.10c. to 2.20c.; from 72 to 96 in. wide, 2.20c. to 2.30c.; 3-16 in. up to 60 in. wide, 2.20c. to 2.35c.; 72 in. wide, 2.40c. to 2.50c.; No. 8 up to 60 in. wide, 2.20c. to 2.25c.; Flange and Head quality, 0.25c. extra.

Sheets.—Relatively considered, there is a fair demand for Sheets, especially in the lighter gauges. There is, however, no disposition on the part of jobbers or consumers to exceed their immediate requirements, and small orders for quick shipment are the rule. Regular price schedules are generally observed, although there is some cutting by a few mills. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; Nos. 28, 2.68c.; No. 29, 2.78c.; Nos. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.20c.; No. 12, 2.25c.; No. 14, 2.30c.; No. 16, 2.40c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 35c.; No. 27, 3.70c.; Nos. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

Bars.—The tonnage of new business being entered is extremely light, and the fact that only two or three of the mills in this district are being operated makes it evident that specifications are coming out very slowly. Due, possibly, to the differential of more than \$2 a ton between Iron and Steel Bars, there is a slightly better demand for the former. Although prices on Steel Bars are being held by the leading mills, there is some shading being done by the smaller interests. The situation in Iron Bars is hardly as strong as in Steel; this was demonstrated by a recent offer in this market of 1000 tons by a Western mill at a little under 1.50c., Chicago. Quotations, Chicago, are as follows: Steel Bars, 1.78c., with half extras; Iron Bars, 1.65c.; Hoops, 2.18c., extras as per Hoop card; Bands, 1.78c., as per Bar card, half extras; Soft Steel Angles and Shapes, 1.88c., half extras. Store prices are as follows: Bar Iron, 2.10c. to 2.25c.; Steel Bars, 2c. to 2.10c.; Steel Bands, 2c., as per Bar card, half extras; Soft Steel Hoops, 2.35c. to 2.45c., full extras.

Merchant Pipe.—Though not showing marked improvement, the demand for Merchant Pipe is at least holding its own. The totals of sales for April show a little gain over March, but not enough to signify decisive forward progress. The extreme demoralization of prices that existed some weeks ago in the local jobbing trade has disappeared and prices are now pretty evenly held at the current quotations. The following mill discounts are quoted: Black Pipe, 3/4 to 6 in., 71.2; 7 to 12 in., 68.2; Galvanized, 3/4 to 6 in., 61.2.

These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 71 per cent. on Black Steel Pipe, $\frac{3}{4}$ to 6 in. From two to three points above these prices is asked for Iron Pipe.

Boiler Tubes.—There is but a scanty demand for Merchant Tubes, either from mill or store. Railroads are restricting their purchases of Locomotive Tubes to what is required for repairs, and their needs are sharply curtailed by the large amount of motive power equipment now idle. Mill quotations for future delivery, on the base sizes, are as follows: 2 $\frac{1}{2}$ to 5 in., in carload lots, Steel Tubes, 63.2; Iron, 50.2; Seamless, 49.2; 2 $\frac{1}{2}$ in. and smaller, and lengths over 18 ft., and 2 $\frac{1}{2}$ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

	Steel.	Iron.	Seamless.
1 to 1 $\frac{1}{2}$ in.	.35	.35	.35
1 $\frac{1}{2}$ to 2 $\frac{1}{4}$ in.	.50	.35	.35
2 $\frac{1}{2}$ in.	.52 $\frac{1}{2}$	.35	.35
2 $\frac{1}{2}$ to 5 in.	.60	.47 $\frac{1}{2}$	.47 $\frac{1}{2}$
6 in. and larger.	.50	.35	..

Merchant Steel.—There is little interest in the market, consumers placing occasional small orders and straggling specifications against existing contracts. Quotations are as follows: Planished or Smooth Finished Tire Steel, 1.98c.; Iron Finish up to 1 $\frac{1}{2}$ x $\frac{1}{2}$ in., 1.93c., base, Steel card; Iron Finish, 1 $\frac{1}{2}$ x $\frac{1}{2}$ in. and larger, 1.78c., base, Tire card; Channels for solid Rubber Tires, $\frac{3}{4}$ to 1 in., 2.28c., and 1 $\frac{1}{2}$ in. and larger, 2.18c.; Smooth Finished Machinery Steel, 2.18c.; Flat Sleigh Shoe, 1.93c.; Concave and Convex Sleigh Shoe, 2.08c.; Cutter Shoe, 2.46 $\frac{1}{2}$ c.; Toe Calk Steel, 2.33c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7 $\frac{1}{4}$ c. to 8c., and still higher prices are asked on special grades. Shafting, 56 per cent. off in car lots; 52 per cent. less than car lots, base territory delivery.

Cast Iron Pipe.—A letting of 5000 tons, comprising the requirements of the city of St. Louis, was awarded to the United States Cast Iron Pipe & Foundry Company. Contracts for 1000 tons of 16 and 24 in. Pipe let by Saginaw, Mich., at \$21.75 and \$21.50 per ton, respectively, on a \$2 freight rate, and 700 tons by Jefferson, Ohio, 4 in., 6 in. and 8 in., at \$21.70 per ton, were taken by the Massillon Iron & Steel Company. Besides these lots there was a letting on Monday of between 300 and 400 tons at Milan, Mich. Except on small routine orders the market as to values is practically an open one, and it would seem from some of the low prices brought out on competitive bids that prospective reductions in Pig Iron were being discounted. We quote, nominally, per net ton, Chicago, as follows: Water Pipe, 4-in., \$27; 6 to 12 in., \$26; 18-in. and up, \$25; with \$1 extra for Gas Pipe.

Metals.—A feature of the Metal market is the placing of small orders in the local market by large concerns which ordinarily buy at first hands in round lots. These purchases represent current requirements which are of course exceedingly meager. On such business prices hold without change. There is not enough doing in Old Metals to influence prices one way or the other. We quote as follows: Casting Copper, 13 $\frac{1}{4}$ c.; Lake, 13 $\frac{1}{4}$ c. to 14c., in car lots for prompt shipment; small lots, $\frac{1}{4}$ c. to $\frac{3}{4}$ c. higher; Pig Tin, car lots, 33c.; small lots, 33 $\frac{1}{2}$ c.; Lead, Desilverized, 4c. to 4.25c., for 50-ton lots; Corroding, 5.35c. to 5.45c., for 50-ton lots; in car lots, 2 $\frac{1}{4}$ c. per 100 lb. higher; Speiter, 5c.; Cookson's Antimony, 10 $\frac{1}{2}$ c., and other grades, 9 $\frac{1}{4}$ c. to 10 $\frac{1}{4}$ c.; Sheet Zinc is \$7 list, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 12 $\frac{1}{4}$ c.; Heavy Copper, 12 $\frac{1}{4}$ c.; Copper Bottoms, 11c.; Copper Clips, 11c.; Red Brass, 12c.; Yellow Brass, 10 $\frac{1}{4}$ c.; Light Brass, 6 $\frac{1}{2}$ c.; Lead Pipe, 3 $\frac{1}{4}$ c.; Zinc, 3 $\frac{1}{4}$ c.; Pewter, No. 1, 21c.; Tin Foil, 25c.; Block Tin Pipe, 27c.

Old Material.—With the exception of Rerolling Rails, all grades of Scrap are weaker, though with few exceptions the decline has not exceeded 25c. a ton. Lack of demand from consumers is a characteristic feature of the situation. The rolling mills, running only intermittently, are reducing their stock piles slowly, and consequently making few purchases. What they do buy is generally secured at a shade from ruling prices, which are thus sagging under continued pressure. A lot of about 3400 Car Wheels, sold by the Chicago, Rock Island & Pacific, brought \$12.50 per gross ton. The railroad offerings scheduled for the present week, include the Santa Fe, 3700 tons; Chicago & Northwestern, 2800 tons; Pennsylvania, 4000 tons; Baltimore & Ohio, 5200 tons; Big Four, 1500 tons, and a small lot by the Erie, aggregating in all upward of 18,000 tons. A large portion of this tonnage will naturally be diverted to this market, and will doubtless have a depressing effect upon values. We quote, per gross ton, f.o.b. Chicago, as follows:

Old Iron Rails.	\$14.75 to \$15.25
Old Steel Rails, rerolling.	13.00 to 13.50
Old Steel Rails, less than 3 ft.	12.00 to 12.50
Relaying Rails, standard sections, subject to inspection.	20.50 to 21.50
Old Car Wheels.	12.50 to 13.00
Heavy Melting Steel Scrap.	10.50 to 11.00
Frogs, Switches and Guards, cut apart.	11.50 to 12.00
Mixed Steel.	8.50 to 9.00

The following quotations are per net ton:

Iron Flat Plates.	\$13.00 to \$13.50
Iron Car Axles.	15.75 to 16.25
Steel Car Axles.	14.50 to 15.00
No. 1 Railroad Wrought.	10.75 to 11.25
No. 2 Railroad Wrought.	9.75 to 10.25
Railway Springs.	10.75 to 11.25
Locomotive Tires, smooth.	12.50 to 13.00
No. 1 Dealers' Forge.	9.00 to 9.50
Mixed Busheling.	7.00 to 7.50
Iron Axle Turnings.	5.50 to 6.00
Soft Steel Axle Turnings.	5.50 to 6.00
Machine Shop Turnings.	5.00 to 5.50
Cast Borings.	4.00 to 4.50
Mixed Borings, &c.	4.00 to 4.50
No. 1 Mill.	6.50 to 7.00
No. 2 Mill.	5.50 to 6.00
No. 1 Boilers, cut to Sheets and Rings.	6.75 to 7.25
No. 1 Cast Scrap.	11.50 to 12.00
Stove Plate and Light Cast Scrap.	10.00 to 10.50
Railroad Malleable.	9.75 to 10.25
Agricultural Malleable.	9.25 to 10.25
Pipes and Flues.	7.50 to 8.00

Cincinnati.

CINCINNATI, OHIO, May 6, 1908.—(By Telegraph.)

There is no appreciable improvement in the local Iron market. In the machinery trade there is a little better feeling among manufacturers of engines, boilers and electric power generating machinery. A local concern is reported to have placed a good sized order of engines for shipment to Mexico.

Pig Iron.—It is generally conceded among the largest local sellers that most of the inquiries coming in are still to be classed as feelers. The buyers of the week have been confined almost entirely to the Pipe foundries, the Steel makers and manufacturers of agricultural implements. While there is no open quotation of \$11.50, Birmingham, for Southern No. 2, at least two local representatives of Southern furnaces announce their willingness to accept business on that basis for spot shipment. There is a very good inquiry for low grades—one from a large Michigan car manufacturing concern for delivery in July and August for 1500 tons and another from an eastern Virginia consumer in tide-water territory for the same amount, comprising 500 tons of No. 3 Foundry, 500 tons of Forge and 500 tons of Mottled for early delivery. This business is being figured at about \$10.50 for Forge and \$10, Birmingham, for Mottled, although it is said both prices could be shaded slightly on a basis of the present weakness of No. 2 Foundry. It is reported that the southern Ohio inquiry for Basic resulted in some close competition between Valley and Virginia furnaces. The successful bidders secured business aggregating between 5000 and 6000 tons, and at a price approximating about \$14 at Virginia furnace and \$15 at Valley furnace. The melters had an offer of about \$16.40, delivered, on an off Basic, but it was declined, it is understood, on the excuse that the price was too near that offered on standard Basic. Sales of Bessemer and Malleable Bessemer in this market record those grades as firmest during the week, the price having been well maintained at around \$16.50, Ironton, on Malleable Bessemer. The Indiana inquiry for Foundry Iron developed a sale of about 100 tons of Valley, some Virginia and some Southern Iron, the first named at about \$15, Valley furnace. We note an inquiry from a Michigan maker of Steel Castings for 300 tons of Low Phosphorus Iron for Acid Open Hearth furnace use, May, June and July delivery. Eight per cent. Ohio Silvery is still quoted at \$18.50. Present prices rule for second and third quarter, but no figures are obtainable on the last quarter. On No. 2 Foundry, \$14.50 at Valley furnace is frequently heard. The Wellston Iron & Steel Company, Wellston, Ohio, is tearing down one stack, and will rebuild, while its No. 2 is relining, and will go in blast soon. For early delivery and extending in third quarter we quote, f.o.b. Cincinnati, freight rates being \$3.25 from the Birmingham and \$1.20 from the Hanging Rock District, as follows:

Southern Coke, No. 1.	\$15.25 to \$15.75
Southern Coke, No. 2.	14.75 to 15.25
Southern Coke, No. 3.	14.25 to 14.75
Southern Coke, No. 4.	13.75 to 14.25
Southern Coke, No. 1 Soft.	15.25 to 15.75
Southern Coke, No. 2 Soft.	14.75 to 15.25
Southern Coke, Gray Forge.	13.50 to 14.00
Southern Coke, Mottled.	13.00 to 13.50
Ohio Silvery, 8 per cent. Silicon.	19.70
Lake Superior Coke, No. 1.	16.70 to 17.20
Lake Superior Coke, No. 2.	16.20 to 16.70
Lake Superior Coke, No. 3.	15.70 to 16.20
Standard Southern Car Wheel.	22.25 to 22.75
Lake Superior Car Wheel.	22.00 to 22.50

(By Mail.)

Coke.—The mails of Monday brought in inquiries or actual orders as much, in the case of the larger dealers, as all of last week. This suggests to close observers of melt statistics that the supply at foundries is very short, and melters are convinced that the minimum in price has been reached. One dealer sold on Monday a car of New River, special, for spot delivery, at \$3, at oven. Standard New River is quotable at \$2.75. Connellsville Foundry is obtainable at about \$2 to \$2.25, at oven; Wise County, \$2.25;

Pocahontas, \$2 to \$2.10. Some new contracts are noted reading a year from May 1 for deliveries on Foundry grades at current prices for consumption in the New England States. Ordinarily, little contracting is being done at this time, as almost all forward delivery orders are made in January or July of each year. There is nothing heard of Furnace grades.

Finished Iron and Steel.—Beyond a little increased inquiry and sale to Southern builders of Structural Material, conditions in this market are the same as last week. Material for boilers and engines is having a fair sale, especially Boiler Tubes, on which mill prices are as follows: 1½ to 2¼ in., 57.50, with 5 off; 2½ in., 59.50, with 5 off; 2¾ to 5 in., 63.50, with 5 off, all in carload lots and f.o.b. Cincinnati. For stock shipment the prices are 1¾ in. at 54; 2½ in. at 56, and 2¾ in. at 62. Orders from stock are filled by dealers at the following prices, which are f.o.b. Cincinnati: Iron Bars, carload lots, 1.65c. base, with half extras; small lots from store, 1.85c. base, half extras. Steel Plates, carload lots, 1.75c. base, half extras; small lots from store, 1.85c. base, half extras. Base Angles, carload lots, 1.85c. base; small lots from store, 2.10c. Beams, Channels and Structural Angles, 1.85c. base; small lots from store, 2.10c. Plates, ½-in. and heavier, carload lots, 1.85c.; small lots from store, 2c. Blue Annealed Sheets (Heavy), No. 16, carload lots, 2.15c.; small lots from store, 2.50c. No. 14, carload lots, 2.05c.; small lots from store, 2.40c. No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.20c. No. 12, carload lots, 2c.; small lots from store, 2.30c. Sheets (Light), Black, No. 28, carload lots, 2.65c. Galvanized Sheets, No. 28, carload lots, 3.70c. Steel Tire, 4-in. and heavier, carload lots, 1.95c. Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

Old Material.—It would seem that the lowest levels had about been reached in Scrap, but dealers here confidently predict still lower prices ere the reaction sets in. There has been some inquiry for Relayers, and some scattering sales of Heavy Melting Steel Scrap, but in the main the inactivity is almost painful. Quotations are about as follows, per gross or net ton as indicated, and f.o.b. Cincinnati:

No. 1 Railroad Wrought, net ton.....	\$10.50 to \$11.50
Cast Borings, net ton.....	4.00 to 5.00
Heavy Melting Steel Scrap.....	11.00 to 11.50
Steel Turnings, net ton.....	5.00 to 6.00
No. 1 Cast Scrap, net ton.....	12.00 to 13.00
Burnt Cast and Wrought, net ton.....	8.00 to 9.00
Old Iron Axles, net ton.....	14.50 to 15.50
Old Iron Rails, gross ton.....	13.00 to 14.00
Old Steel Rails, long, gross ton.....	11.00 to 12.00
Old Steel Rails, short, gross ton.....	11.00 to 12.00
Relaying Rails, 56 lb. and up, gross ton.....	22.00 to 23.00
Old Car Wheels, gross ton.....	12.00 to 13.00
Low Phosphorus Scrap, gross ton.....	13.00 to 14.00

San Francisco.

SAN FRANCISCO, April 29, 1908.

The improvement in the jobbers' demand for Iron, Steel and Pipe continues, although the ordering is somewhat spasmodic in some lines. Stocks were greatly depleted during the dull season, and the present buying will replenish the broken lines. However, it may take some time yet for business to get up to the normal conditions of previous years. The tonnage moving from the East has lately increased. The conditions in the mining districts and oil regions are still improving, with some exceptions, and the market for Tool Steel, Steel Bars and Pipe has thus been benefited. The building situation in San Francisco is still quite active, notwithstanding the difficulty of securing money from the banks for construction work. Private individuals are loaning more money than formerly. There will be a great deal of building this summer, but whether this will hold good throughout the year remains to be seen. If the money situation improves after the Presidential nominations have been made, as many expect, the volume of building work will increase instead of diminish. The proposed bond issues, aggregating \$18,000,000, which will be voted upon May 5, have been indorsed by representatives of the leading commercial bodies of the city at a mass meeting. The construction of a \$5,000,000 salt water auxiliary fire system and the erection of new schools and public buildings are provided for.

Structural Materials.—Most of the Steel frames in course of construction in the city have been completed, and the Steel crews will find work rather slack until some additional buildings are started. Among the contracts pending for Structural Steel for large buildings in this city are those for the new Y. M. C. A. Building, which is to cost \$500,000; the Olympic Club Building, and the new Army Transport Depot. The last named contract will involve more than 2000 tons of Steel of various kinds. Floor beams for a number of large wharves and roof trusses for the long warehouses, 40 ft. in width, are included in the specifications for this great enterprise, which is to cost more than \$1,000,000. All of the work including piers, sheds, &c., is to be of the most substantial construction. The Thomson Bridge Company, of this city, has been awarded a contract to construct a Steel viaduct at Bernardino, Cal., for the Santa Fe Railroad Com-

pany. This company's bid per ton of Steel to be erected was the lowest.

Pig Iron.—Little improvement is noted in the demand for Pig Iron in this market. Brokers are hoping for a revival of business among the foundries and engineering works. The falling off in shipbuilding along the Coast has hurt the shops that formerly kept busy on the construction of engines for the numerous new steam schooners intended for the coasting lumber trade. Few arrivals of Pig Iron from England, Scotland or China have been reported recently and little is afloat for this port. Local foundries are still buying from hand to mouth and in small lots. While all of the warships of the Atlantic squadron, which is to arrive here next week, will be dry docked, little repair work will be done in private shops. No. 1 English, No. 1 Scotch and Chinese Pig Iron are quoted in this market at about \$28 to \$29 per ton, ex yard.

Cast Iron Pipe.—Good inquiries are still reported for Cast Iron Pipe and some important contracts are pending. Some progress is being made toward the carrying out of important municipal water enterprises on the Coast, and, altogether, things are looking better, although considerable time may elapse before large contracts will be closed for these projects. The prospect is encouraging for the securing of the proposed Lake Eleanor supply from the Sierras in connection with the proposition to furnish San Francisco with a supply of pure mountain water under a municipal system to be paid for by the issue of bonds. Engineer Marsden Manson is in Washington and has helped secure further water rights from the Government. More than \$2,000,000 worth of Cast Iron Pipe will be required for the proposed salt water auxiliary fire protection system, according to the latest plans. Prices of Cast Iron Pipe, f.o.b. cars Pacific Coast terminal points, are about as follows, per net ton: 6, 8, 10 and 12 in., \$38; 4-in., \$39.

Merchant Pipe.—An improvement is noted in the demand for Merchant Pipe and an increased tonnage is moving. Prices are fairly well maintained. Discounts on Steel Pipe are about as follows on jobbers' carloads:

	Steel.
	Black. Galv.
½ to ¼ in.	58.5 42.5
¾ in.	60.5 46.5
1½ in.	62.5 50.5
2½ to 6 in.	66.5 56.5
7 to 12 in.	63.5 48.5
Extra strong, plain ends:	
½ to ¾ in.	51.5 39.5
¾ to 4 in.	58.5 46.5
4½ to 8 in.	54.5 42.5
Double extra strong, plain ends:	
½ to 8 in.	47.5 36.5

Bars.—The conditions induced by local Iron mills producing Scrap Bar of indifferent quality, by reason of their recent reduction in prices, are making inroads into the Bar Steel trade materially. On account of the decided difference in prices there is an increase in the consumption of Bar Iron in place of Steel. General business conditions are also getting better, and the consumption of Bars is steadily increasing. Jobbers' stocks are low, this applying especially to the large jobbers. Iron and Steel Bars are now sold by merchants from stock at about 2.25c.

Coke.—With the starting up of the smelters, the demand for the lower grades of Coke has improved, while Foundry Coke is in better demand than Pig Iron. Stocks of Coke in the dealers' hands are still much larger than they would like to have and prices are not advancing. Arrivals of foreign Coke by sea have been very light throughout the past month. A gradual improvement in the coast demand for Coke may be expected as business increases at mines and foundries. English Foundry Coke is quoted at about \$14 to \$15 per ton, laid down here. German Syndicate and Australian Coke are somewhat lower.

Railroad Materials.—Business has been almost at a standstill for months as far as standard Rails are concerned, and other Railroad Materials are in very slack demand. No new railroad projects are being started in California, but one is on foot in the Puget Sound region. The Pacific & Southwestern Railway has been incorporated at Tacoma, with a capital stock of \$15,000,000, by William H. Crocker and Templeton Crocker, of San Francisco, and George Crocker, James Searles and Thomas H. Hubbard, of New York City. It has been given out that the proposed 500-mile line from Tacoma to Walla Walla, Wash., will form a connection with a new transcontinental line. A. D. Shepard, general manager of the Pacific Improvement Company, filed the articles of incorporation and put surveyors in the field. Sixty acres of tide lands on the Tacoma water front have been acquired for a terminal. The United Railroads of San Francisco has purchased from the General Electric Company for immediate delivery an additional 5000-kw. three-phase, 13,200-volt generating unit for its North Beach power station in San Francisco. This Curtis steam turbine, set with the additional boilers required, means a large investment, but the demand for power for the opera-

tion of street cars is so great that the company was forced to increase its plant.

The contract for furnishing 6600 ft. of pipe and fittings and nine hydrants to be used in the extension of the Lovelock water system in Nevada was awarded to the Crane Company, San Francisco, whose bid of \$2284.70 was the lowest of the five submitted.

Surveyor Guy McMurtry spent three days in San Francisco investigating the probable cost of a city water works for Yuba City, comprising a steel tower, 70 ft. high, set on concrete foundation, an 80,000-gal. tank, and 8 and 6 in. mains on every street in the city, and also a gasoline or steam engine and electric motor and connections. It is the intention of the trustees to call a special election at once for the purpose of voting the necessary bonds.

Judge Ellsworth has signed an order restraining the local Board of Public Works from entering into a contract with the Doak Gas Engine Company for the erection of a salt water plant in Oakland, Cal. The complaint is charged that the bid of the Fairbanks-Morse Company, of \$28,420 was \$150 lower than that submitted by the Doak Gas Engine Company. The matter will come up soon for a final settlement.

The contract for the construction of the eight-story building to be occupied by the Y. M. C. A., at Sixth and Taylor streets, in Portland, Ore., has been awarded to the Northwest Bridge Company of that city.

Pittsburgh.

PARK BUILDING, May 5, 1908.—(By Telegraph.)

Pig Iron.—The trade here is awaiting with much interest the outcome of the meeting of the Ore and Pig Iron Committee to be held in New York this week, and consumers are holding back orders for Pig Iron until the result of the deliberations are known. Bessemer Iron is nominally \$16.25, Valley furnace, or \$17.15, Pittsburgh, but if any business was offering it is likely that \$16 could be done. It has sold in scattered lots below \$17, Pittsburgh. Basic Iron is fairly strong at \$15.50, Valley furnace, but one or two sellers outside the Valley districts are offering it for nearby points of delivery at a less price. Nothing is doing in Forge Iron, which is nominally \$14 to \$14.25, Valley furnace, or \$14.90 to \$15.15, Pittsburgh. A few small lots of Foundry Iron ranging from carloads up to 100 tons are being sold on the basis of \$14.75 to \$15, Valley furnace, or \$15.65 to \$15.90, Pittsburgh and we quote the market on Northern No. 2 Foundry at that price.

Steel.—Practically no new buying is being done in Billets, and only a fair tonnage is being specified for against old contracts. In Sheet and Tin Bars the mills are fairly busy, the Carnegie Steel Company shipping out quite a heavy tonnage to the American Sheet & Tin Plate Company, and to some of the independent Sheet and Tin Plate mills. Leading producers of Steel claim that regular prices are being maintained, which are \$28, Pittsburgh, and \$28.50, Youngstown or Wheeling, for Bessemer and Open Hearth Billets; Sheet and Tin Bars taking \$1 advance. Forging Billets are very dull, and are nominally \$29 to \$30, Pittsburgh.

Pipes and Tubes.—Published reports that the National Tube Company and other Pipe interests would make a material cut in prices of Tubular Goods prior to May 16 are officially denied and without foundation. No such action is contemplated by leading Pipe interests at this time.

(By Mail.)

A difference of opinion prevails as to whether actual improvement can be expected until the Presidential election is out of the way. It is pointed out that the summer months will soon be here when the Steel business always falls off, and that after the hot weather is over it will be so close to the time for holding the election that consumers will continue to wait until they find out whether a new party will come into power. Others believe, however, that with the nominations made and assurances of good crops business in the second half of the year will show an improvement over the first half. The conviction is almost universal, nevertheless, that 1908 is going to be a lean year. General conditions in the Iron trade to-day are very little, if any, better than they were last October when the slump came. There is no heavy buying in sight. A meeting of the leading Ore interests was held in Cleveland last Friday, and it is stated that they agreed unanimously to maintain last year's prices on Ore for this year. It is reported that some of the leading Southern producers of Pig Iron are now more closely allied in the matter of maintaining prices, but as far as the Northern producers are concerned the Pig Iron market is wide open, and prices are lower to-day than they have been at any time since the decline started last October. There is very little demand for Bessemer and Basic Iron, and while there is more buying of Foundry Iron, this is due to the fact that some of the furnaces are naming very low prices. Bessemer Iron has sold below \$17, Pittsburgh, in small lots, while Basic is fairly strong at \$15.50, Valley furnace. Only one furnace in the Shenango Valley is now making Bessemer

Iron, this being No. 2 stack of the Shenango Furnace Company, at Sharpsville, the blast furnace of the Stewart Iron Company, at Sharon, having recently gone on Low Phosphorus. In the Mahoning Valley the Republic Iron & Steel Company is running two furnaces at Hazelton, while Struthers, Girard, and one Andrews & Hitchcock stack, are running on Foundry and Basic. Practically no orders are being placed for Steel Rails, and the demand for Billets is light. A fair business is being done in Sheet and Tin Bars, particularly in the latter. In Finished Iron and Steel conditions are no better, and in some lines the demand has fallen off as compared with March. Coke is offered at the lowest prices that have ruled for some years. The Scrap trade is slow and prices are weak.

Steel Rails.—The tonnage in both Light Rails and Standard Sections taken by the Carnegie Steel Company in the past week was light, only a few small orders having been placed. The three Edgar Thomson Rail mills at Bessemer are in operation this week, and will be running next week, but only to about 35 to 40 per cent. of capacity. Regular prices on Light Rails, which continue to be shaded from \$3 to \$4 a ton by rerolling mills, are as follows: 25 to 45 lb. Sections, \$28; 20-lb., \$29; 16-lb., \$30, and 12-lb., \$32. We quote Standard Sections at \$28, at mill, and Angle Splice Bars at 1.65c., at mill.

Ferromanganese.—The firmer feeling referred to in this report last week continues, and to-day prices are fully \$1 a ton higher than two weeks ago. Consumers realize that Ferro is low in price, and in some cases are trying to buy for delivery over the balance of this year and into next, but sellers refuse to contract so far ahead. We quote 80 per cent. foreign at \$43, seaboard, or \$44.95, Pittsburgh, and note sales of about 75 to 100 tons at this price.

Ferrosilicon.—The demand is fairly active, and we quote 50 per cent. at \$70, f.o.b. Pittsburgh.

Muck Bar.—The market continues quiet, and we do not hear of any inquiries. A little more Muck Bar is being made in the Pittsburgh District than for some time, but it is being worked up into finished material by the producers. We quote best grades, made from all Pig Iron, at nominally \$26.50 to \$27, but there is no business offering to test the market.

Skelp.—Fair shipments are being made by the mills on specifications against contracts, but new orders are only for small lots. We quote: Grooved Steel Skelp, 1.55c. to 1.60c.; Sheared Steel Skelp, 1.65c. to 1.70c.; Grooved Iron Skelp, 1.75c. to 1.80c.; Sheared Iron Skelp, 1.85c. to 1.90c., Pittsburgh.

Rods.—No important inquiries are in the market, actual sales being confined to small lots for prompt delivery. Consumers are not disposed to buy ahead, believing that prices may be lower. Bessemer Rods are held at \$35, Open Hearth at \$36 and Chain Rods at \$37, f.o.b. Pittsburgh.

Plates.—Buying is only in small lots for actual needs. Neither jobbers nor consumers are disposed to order ahead, feeling that prices will not be any higher, but that if any change is made it will be in the direction of lower values. None of the mills is operating more than 50 per cent. of capacity, and in some cases to only 25 per cent., and there is little business on their books. In spite of lack of demand prices are being well maintained, but there is some shading in narrow sizes by certain mills of \$1 to \$2 a ton. Regular prices are as follows: Tank Plates, $\frac{1}{4}$ -in. thick, $\frac{6}{7}$ in. up to 100 in. wide, 1.70c., base, at mills, Pittsburgh. Extras over this price are as follows:

	Extra per 100 lb.
Gauges lighter than $\frac{1}{4}$ -in. to and including 3-16-in.	
Plates on thin edges.....	\$0.10
Gauges Nos. 7 and 8.....	.15
Gauge No. 9.....	.25
Plates over 100 to 110 in.....	.05
Plates over 110 to 115 in.....	.10
Plates over 115 to 120 in.....	.15
Plates over 120 to 125 in.....	.25
Plates over 125 to 130 in.....	.50
Plates over 130 in.....	.00
All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.).....	.10
Complete Circles.....	.20
Roller and Flange Steel Plates.....	.10
"A. B. M. A." and ordinary Firebox Steel Plates.....	.20
Still Bottom Steel.....	.30
Marine Steel.....	.40

Shell grade of steel is abandoned.

TERMS.—Net cash 30 days. Pacific Coast base, 1.60c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes, 14 in. wide down to 6 in. of Tank, Ship or Bridge quality.

Structural Material.—New work is coming out slowly, and no large contracts have been placed in this district for some time. In the past week the A. & S. Wilson Company has taken the contract for the Second National Bank Building, at Uniontown, and the Steel, about 450 tons, will be furnished by the Jones & Laughlin Steel Company. Three or four other jobs, the largest of which is the Pittsburgh & Lake Erie bridge at Beaver, about 14,000 tons, are hung up. Prices on the small amount of fabricated work that is being placed are very low, in some cases work being taken at less than actual cost. A meeting of the Steel Erectors' Association was held in Pittsburgh on Tuesday.

but no action of importance was taken. We quote Beams and Channels, up to 15 in., 1.70c.; over 15 in., 1.80c.; Angles, 3 x 2 x $\frac{1}{4}$ in. thick, up to 6 x 6 in., 1.70c.; 8 x 8 and 7 x 3 $\frac{1}{2}$ in., 1.80c.; Zees, 3 in. and larger, 1.70c.; Tees, 3 in. and larger, 1.75c.; Bulb Angles and Deck Beams, 2c. Under the Steel Bar card Angles, Channels and Tees under 3 in. are 1.70c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Sheets.—The month of April in the Sheet trade was only fairly satisfactory. The expected increase in business was not realized, that month showing only a small gain over March. The demand for Black and Galvanized Sheets is only fair, and is altogether for small lots for actual needs. A little more is doing in Roofing Sheets, but on the whole the Sheet trade is disappointing. Prices are well maintained, being only slightly shaded by two or three small mills. Regular prices are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c. Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; Nos. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c. No. 28 Painted Roofing Sheets, \$1.75 per square, and Galvanized Roofing Sheets, No. 28, \$3.10 per square, for 2 $\frac{1}{2}$ in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

Cotton Ties.—Buyers are specifying fairly well against contracts, but the tonnage placed so far this year is much lighter than in the corresponding period of 1907. We quote as follows: 3000 bundle lots and over, 85c.; less than 3000 bundle lots, 88c., f.o.b. Pittsburgh.

Hoops and Bands.—No new business is being placed, but consumers are specifying fairly liberally against contracts placed in January this year, at the time prices were guaranteed by the mills. Regular prices are as follows: Steel Hoops at \$2, base, full Hoop card extras; Steel Bands, \$1.60, base, half Steel card extras, all f.o.b. cars, Pittsburgh, Pa., in carload lots, for delivery during 1908.

Tin Plate.—The United States plant of the American Sheet & Tin Plate Company at Demmler was started up on Monday, and this company is now operating 213 hot mills out of a total of 252 hot mills, some of which, however, will probably not be operated again. All the Tin Plate concerns have a fair amount of tonnage on their books for delivery over the next five or six months, but practically all of the business for this season's fruit trade has been placed, and is not as heavy as the tonnage last year. While prospects are good for a large fruit crop, indications are that the consumption of Tin Plate this year may fall slightly below the figures of last year. It is stated that prices are being absolutely maintained by the mills. We quote at \$3.70 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

Iron and Steel Bars.—The situation in both Iron and Steel Bars as regards new business shows no improvement whatever. Orders are few and only for small lots for actual needs. Specifications on contracts for Iron Bars are possibly coming in a little more freely, but none of the mills is able to operate to more than 50 per cent. of capacity, and some of them to much less. It is stated that prices on Steel Bars are being absolutely maintained, but on Iron Bars are being shaded by a few small mills. We quote Iron Bars at 1.50c. for the Pittsburgh District, and 1.47c., Pittsburgh, for Chicago and points further west. Steel Bars remain very firm, at 1.60c., Pittsburgh.

Spelter.—Prices have advanced from 5c. to 10c. in the past week or 10 days, due to reports that heavy contracts for Spelter have been taken for foreign shipment. We quote prime grades of Western Spelter at about 4.55., East St. Louis, equal to 0.67 $\frac{1}{2}$ c. Pittsburgh.

Railroad Spikes.—Little new business is being placed and the general situation is quiet. We quote: Standard sizes, 4 $\frac{1}{2}$ x 9-16 in., at \$1.70, and the smaller sizes at \$1.80 per 100 lb. in carloads and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

Merchant Steel.—Purchases are confined to a few small orders for actual needs. Prices are largely nominal, not enough new business being offered to test the market. We quote Cold Rolled Shafting, on contracts for 100 tons and over, 57 per cent. off; carloads, 56 per cent. off, and less than carloads, 52 per cent. off, on which carload freight is allowed within base territory. Nominal prices on Merchant Steel are as follows: Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 2.10c. to 2.15c. Railroad Spring Steel, 1.60c. to 1.75c., the higher price being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron, finished, 1 $\frac{1}{2}$ in. and wider, 1.60c.; under 1 $\frac{1}{2}$ in., 1.75c. Planished Tire Steel is 1.80c., all f.o.b. at mill.

Pipes and Tubes.—Reports are current that the Hope Natural Gas Company, an identified interest of the Standard Oil Company, is in the market for 100 to 150 miles of 16 to 18 in. Line Pipe, but this has not been officially confirmed. Buyers are placing orders only for small lots for actual need. The tonnage entered in April is reported as having been slightly larger than in March. Net discounts on Steel Pipe to the large trade on $\frac{3}{4}$ to 6 in. remain at 74 and 5 per cent. off list, while on Iron Pipe the absolute minimum is 72 and 5 per cent. Discounts on Steel Pipe are as follows:

Merchant Pipe.

	Jobbers, carloads.	Steel.
	Black.	Galv.
$\frac{3}{4}$ to $\frac{1}{4}$ in.	.65	49
$\frac{1}{2}$ in.	.67	53
$\frac{1}{2}$ in.	.69	57
$\frac{3}{4}$ to 6 in.	.73	63
7 to 12 in.	.70	55
Extra strong, plain ends:		
$\frac{1}{2}$ to $\frac{3}{4}$ in.	.58	46
$\frac{1}{2}$ to 4 in.	.65	53
$\frac{3}{4}$ to 8 in.	.61	49
Double extra strong, plain ends:		
$\frac{1}{2}$ to 8 in.	.54	43

Discounts on Genuine Iron Pipe are as follows:

	Black.	Galv.
$\frac{1}{2}$ and $\frac{1}{4}$ in.	.63	50
$\frac{1}{2}$ in.	.65	51
$\frac{1}{2}$ in.	.67	55
$\frac{3}{4}$ to 6 in.	.71	61
7 to 12 in.	.68	53
Extra strong, plain ends:		
$\frac{1}{2}$ to $\frac{3}{4}$ in.	.56	44
$\frac{1}{2}$ to 4 in.	.63	51
$\frac{3}{4}$ to 8 in.	.59	47
Double extra strong, plain ends:		
$\frac{1}{2}$ to 8 in.	.52	41

Boiler Tubes.—Orders for Merchant Tubes continue to be small, and the same is true of Locomotive Tubes, railroads having bought very little for some time. Discounts on Merchant Tubes for small lots, on which an extra 5 per cent. is allowed in carloads, are as follows:

Boiler Tubes.

	Iron.	Steel.
1 to 1 $\frac{1}{2}$ in.	.42	47
1 $\frac{1}{2}$ to 2 $\frac{1}{4}$ in.	.42	59
2 $\frac{1}{2}$ in.	.47	61
2 $\frac{1}{2}$ to 5 in.	.52	65
3 to 13 in.	.42	59
2 $\frac{1}{2}$ in. and smaller, over 18 ft. long, 10 per cent. net extra.		
2 $\frac{1}{2}$ in. and larger, over 22 ft. long, 10 per cent. net extra.		

Connellsville Coke.—It is announced that the H. C. Frick Coke Company will build a model Coke plant on the Hogsett tract of Coal below New Salem, in the Connellsville region, near the Buffington plant. The new works will contain about 600 ovens of the beehive type, and a shaft will be sunk about 500 ft., and a modern steel shaft will be erected. The output of Coke was increased last week, due to the fact that the Frick Coke Company operated most of its ovens six days, instead of four and five days, as heretofore. General conditions are unchanged, the demand for both Furnace and Foundry Coke being light, and no contracts are being placed. Prices continue low, best grades of Furnace Coke being offered for prompt shipment at \$1.50 to \$1.60, and 72-hr. Foundry Coke from \$2.10 to \$2.25 a ton at oven. Other grades of Furnace and Foundry Coke made outside the Connellsville region, and not as high in quality as Connellsville, are being offered at much lower prices. The output of Coke last week in the Upper and Lower Connellsville regions was 164,858 tons, an increase over the previous week of about 17,000 tons.

Iron and Steel Scrap.—The demand for Scrap continues dull, consumers buying only in small lots for actual needs. None of the large consumers of Scrap are buying to any extent, and the actual tonnage being sold is very light, while the tone of the market is weak. The heavy movement in Bundled Sheet Scrap noted before is about over, and no large sales of this material have been made in the past week. Dealers quote about as follows, per gross ton: Heavy Steel Scrap, Pittsburgh, Steubenville or Sharon delivery, \$12.75 to \$13; Cast Borings, \$7.25 to \$7.50; No. 1 Railroad Wrought, \$13.25 to \$13.50; No. 1 Cast, \$14.25 to \$14.50; Bundled Sheet Scrap, \$8.50 to \$9, at shipping point; Sheet Bar Crop Ends, \$16 to \$16.50; No. 1 Busheling Scrap, \$12 to \$12.25; No. 2, \$9 to \$9.25; Iron Axles, \$19 to \$19.50; Steel Axles, \$16.50 to \$17; Low Phosphorus Melting Stock, \$16; Old Steel Rails, short pieces for Open Hearth use, \$12.75 to \$13; Rerolling rails, lower in price, \$13.50 to \$13.75; Machine Shop Turnings, \$8 to \$8.25; Grate Bars, \$12 to \$12.50; Railroad Malleable Scrap, \$11.25 to \$12. We note sales of 300 tons of Cast Iron Borings on the basis of about \$7.50, Pittsburgh.

D. D. Williams & Co. have opened offices at 509-510 Bakewell Building, Pittsburgh, and will be sole agents in this country for Cammell, Laird & Co., Ltd., Sheffield, England, producers of high grade steel and armor plate. The firm will also handle Ferromanganese, Spiegeleisen and other alloys.

Charles R. Bryson, 501 Curry Building, Pittsburgh, has been appointed Western agent of the Philadelphia Roll &

Machine Company, Philadelphia, Pa. He will have charge of the sale of sand and chilled rolls, rolling mill equipment, and charcoal air furnace castings.

St. Louis.

ST. LOUIS, May 4, 1908.

The heavy business interests of this city are making a vigorous concerted movement to promote a full return of confidence, claiming that conditions warrant greater activity. There is a steady gain in building operations, but the feature is rather in the number than in the size. With the railroads, however, except the improvement in sentiment, there is with the large ones no material change. In the case of small Southwestern roads some buying of material and supplies is being done.

Coke.—An improvement is reported in the demand, and we hear of the sale of 2000 tons of Foundry Coke for shipment one year from July.

Pig Iron.—Dealers are in receipt of orders for Pig Iron running from car lots to 150 tons for Southern No. 2 Soft at \$11.75, Birmingham, both for prompt and next three to five months' shipment. It is reported that some sales have been made at \$11.50. The situation is regarded as improving, since inquiries are more numerous.

Structural Material.—There being but few contracts closed with general contractors, the spot demand for Structural Material is limited. The prospects for more activity in building in the near future have improved, and it is known that some contractors are soon to place orders for Steel.

Bars.—Specifications are coming in slowly. Some demand is noted from jobbers to keep up assortment, and manufacturers are buying only as needs require.

Spelter.—Business has improved slightly, and the market for Spelter is firmer. The inquiry is mostly from consumers. We quote \$4.55 to \$4.60.

Old Materials.—There are no lists out this week from any of the railroads, and it is practically a dealers' market. There is some demand for Relaying Rails, mostly from lumber and mining interests. Car Wheels and Cast Scrap are ruling very dull. We quote, f.o.b. St. Louis, per gross ton:

Old Iron Rails.....	\$14.00 to \$14.50
Old Steel Rails, rerolling.....	11.25 to 11.50
Old Steel Rails, less than 3 ft.....	11.00 to 11.25
Relaying Rails, standard sections, subject to inspection.....	21.00 to 22.00
Old Car Wheels.....	13.00 to 13.25
Heavy Melting Steel Scrap.....	10.75 to 11.00
Frogs, Switches and Guards, cut apart.....	10.75 to 11.00
Mixed Steel, country.....	9.00 to 9.50

Following quotations are per net ton:

Iron Fish Plates.....	\$11.50 to \$12.00
Iron Car Axles.....	15.00 to 15.50
No. 1 Railroad Wrought.....	11.00 to 11.25
No. 2 Railroad Wrought.....	10.00 to 10.25
Railway Springs.....	9.75 to 10.00
Locomotive Tires, smooth.....	12.50 to 13.00
No. 1 Dealers' Forge.....	9.50 to 10.00
Mixed Borings, &c.....	3.50 to 3.75
No. 1 Boilers, cut to Sheets and Rings.....	7.50 to 8.00
No. 1 Cast Scrap.....	10.50 to 10.75
Stove Plate and Light Cast Scrap.....	9.00 to 9.50
Railroad Malleable.....	9.50 to 10.00
Agricultural Malleable.....	8.50 to 9.00
Pipes and Flues.....	7.25 to 7.50

The American Car & Foundry Company is of the opinion that of the idle cars at least half are in bad order. With regard to locomotives that have been laid off, in the case of one road some 50 locomotives have been drawn upon to patch up the ones in use. This will lead to busy times with the repair shops within 60 days.

The Koken Iron Works state their recent deliveries of Structural Material in St. Louis are upward of 700 tons. For outside contracts they are furnishing Steel for the addition to the United States Post Office at Ogden, Utah.

Birmingham.

BIRMINGHAM, ALA., May 4, 1908.

Pig Iron.—The circulation given to the report that large Southern interests would endeavor to have the schedule of prices lowered at the coming meeting of Pig Iron and Ore committees in New York has had a material effect upon the trade. Inquiries pending at the time of the last report resulted in the sale of a comparatively small tonnage, and all recent transactions have been of a mandatory nature. The indications of a disposition to negotiate for anticipated requirements, recently noted to some extent among producers, has practically disappeared, and the percentage of order book requirements representing speculative buying has not been increased. The schedule of \$12, Birmingham, for No. 2 is being adhered to, and in the case of producers whose output is believed to be well sold up, the quotations are firm, yet such a basis has not been maintained, and \$11.50 is believed to be nearer a correct representative of the market price. One concern reports the sale of approximately 3000 tons at figures around \$12, but the tonnage re-

ported is the aggregate of small lots. A quotation of \$11.75 per ton for 500 to 800 tons of No. 2 did not result in a sale, and a lot of 1000 tons of No. 3 Foundry is reported sold at \$11, Birmingham. It is understood, however, that the company making the sale has no No. 2 to offer for early deliveries. As to the probable result of the meeting of the committees, information obtainable does not elicit the anticipation of lower prices by producers. All producers report a favorable comparison of order books with present output, and there is no disposition manifested other than to continue the policy of limiting production to order book requirements. In accordance with such a policy, one of the largest companies has found it necessary to blow in an additional furnace. A meeting of all Southern interests will be held in Birmingham to-day, and in view of the New York meeting, May 7, parties most conversant with the situation are of the opinion that marked developments are imminent.

Cast Iron Pipe.—In addition to buying expected for Cuban, South American and Mexican points, as well as a contract for San Francisco, there is now in sight an attractive tonnage for Porto Rico. The principal letting reported during the week is 5200 tons of Water Pipe for the city of St. Louis, Mo. This contract was awarded the United States Cast Iron Pipe & Foundry Company, and it is stated that keen competition resulted in exceptionally low figures, but the price at which the contract was placed is not given out. In the absence of definite information relative to decline in prices, quotations are not revised and we quote Water Pipe nominally as follows, per net ton, f.o.b. cars here: 4 in. to 6 in., \$23; 8 in. to 12 in., \$22; over 12 in. average, \$21, with \$1 per ton extra for Gas Pipe. These prices are probably shaded on large contracts.

Old Material.—There is practically no market at present. Consumers apparently anticipate a further decline in prices by reason of the weakness in the Pig Iron market, and are deferring negotiations accordingly. Dealers are still indisposed to make concessions, which is no doubt due to lack of demand, but are pursuing a conservative course as to stock accumulations. A revision of quotations is not authorized, and we quote nominally as follows, per gross ton, f.o.b. cars here:

Old Iron Rails.....	\$16.00 to \$16.50
Old Iron Axles.....	15.00 to 16.00
Old Steel Axles.....	13.50 to 14.00
No. 1 Railroad Wrought.....	13.00 to 13.50
No. 2 Railroad Wrought.....	10.00 to 10.50
No. 1 Country Wrought.....	11.50 to 12.00
No. 2 Country Wrought.....	10.50 to 11.00
Wrought Pipe and Flues.....	9.50 to 10.00
No. 1 Steel.....	11.00 to 11.50
No. 1 Machinery.....	10.50 to 11.00
Stove Plate and Light Cast.....	9.50 to 10.00
Cast Borings.....	6.00 to 6.50

Cleveland.

CLEVELAND, OHIO, May 5, 1908.

Iron Ore.—Representatives of some of the merchant Ore firms have been calling on the blast furnace interests to which they usually make sales and have picked up some small orders. Few consumers, however, are ready to buy as yet. There is still the feeling among many of the furnace men that present prices will not be maintained, but the Ore men are firm, and some of them, at least, are willing to guarantee their price on the kind of Ore that they sell. While some scattered buying is looked for during May, it is not expected that there will be much activity for several weeks. Shipments from Lake Erie docks have fallen off somewhat as compared with a month ago. It is estimated that there is at present 6,000,000 tons of Ore on the docks, as compared with 7,385,000 tons on December 1. There is no improvement in sight in the lake trade and few boats have started. Some that were chartered for early grain cargoes are being laid up. Two cargoes of Ore, the first to be shipped this season, will be landed at the head of the lakes this week for the Inland Steel Company, Indiana Harbor. Not many cargoes will be shipped to Lake Erie ports during May. Another meeting of the vessel owners will be held in Cleveland, May 12, to fix the time for the general start of the lake fleet. It is probable that the start will be further postponed until June 1. The Steel Corporation is fitting up some of its largest boats, but they will probably not be placed in commission soon. Managers of other lines are doing little toward fitting out their boats. No trouble has resulted from the inauguration of the open shop policy by the dock managers, which went into effect May 1. Some of the Ore handlers at Fairport, Ashtabula and Conneaut have made contracts with the dock managers for two years under the open shop plan. The wages will be the same as last year, and there will be no important changes in working conditions. Prices for 1908 delivery at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, \$5; Mesaba Bessemer, \$4.75; Old Range Non-Bessemer, \$4.20; Mesaba Non-Bessemer, \$4; Siliceous Bessemer, \$4.75; Siliceous Non-Bessemer, \$2.35 to \$2.60.

Pig Iron.—The market is as quiet as it has been at any time this year. The few sales have mostly been car lots at

low prices. The inquiries a week ago for Foundry Iron for the last half delivery failed to result in any contracts. In view of the present unsettled condition of the market, melters are disposed to buy only in small lots for their immediate requirements. The only sale of any size reported by local interests was 200 tons of No. 2 Foundry at a price under \$15, Valley furnace. We quote Northern No. 2 Foundry at \$14.75 to \$15, Valley furnace. One local furnace is asking the latter price for outside shipments. Three of the largest furnace interests are refusing to make the low quotations now prevailing, and by holding their Iron at \$16, at furnace, are virtually out of the market. Little Iron is being taken on contracts, so that stock piles of furnaces out of blast are being reduced but slowly, and one or two furnaces that went in blast in the past few weeks are rapidly accumulating Iron. There is a possibility that these furnaces will go out of blast again when they have accumulated enough Iron to fill outstanding contracts. The melt in this territory shows no improvement. Most of the local foundries have good sized stocks on hand. For prompt shipment we quote, delivered, Cleveland, as follows:

Bessemer	\$17.15
Northern Foundry, No. 1	\$16.15 to 16.50
Northern Foundry, No. 2	15.65 to 16.00
Northern Foundry, No. 3	15.15 to 15.60
Southern Foundry, No. 2	15.85 to 16.35
Gray Forge	15.00

Coke.—A local furnace interest that will place its stack in blast this week has closed a contract for its Furnace Coke requirements for the next five months, amounting to 9000 to 10,000 tons per month. The price made was \$1.55, at oven, for first class Connellsville Furnace Coke. Some contracts for Foundry Coke for the last half of the year were closed at about \$2.25, at oven, for 72-hr. Connellsville Foundry Coke. We quote the best grades of Foundry Coke at \$2 to \$2.25, at oven, for spot shipment and \$2.25 to \$2.40 for last half.

Finished Iron and Steel.—A slight improvement is seen in the demand for Structural Material and Plates both on contracts and in new orders from fabricators, but otherwise the situation shows little change. The stocks of some of the large manufacturing plants are becoming depleted, but the only orders they are giving are for small lots for immediate needs. The Bar situation shows no improvement, the demand for both Iron and Steel Bars being light. The Union Rolling Mill is running about full this week, and the Empire Rolling Mill Company is running one of its mills. The mill of the Cleveland Steel Company started up Monday after a short shutdown. While the larger producers are adhering to the price of 1.50c., Pittsburgh, for Iron Bars, the price is still being cut to 1.40c., and in some cases to 1.35c., Pittsburgh, by one or more small producers. The price of Steel Bars is being firmly maintained. The demand for Plates is light. Prices are being well maintained on the wide sizes, but on the narrow sizes price concessions of from \$1 to \$2 are being made. The demand for Sheets shows no improvement, and some of the smaller mills are making concessions. Contracts were closed for two buildings that will require a fair tonnage in Structural Material within the next few weeks. One is a factory building for the Cleveland Worsted Mills Company, and the other a local store building. The demand for Light Rails has fallen off. Warehouse business is light. We quote Iron Bars at 1.50c. to 1.60c., Cleveland, for car lots; Steel Bars, 1.70c., Cleveland, for car lots, half extras; Beams and Channels, 1.80c., base, Cleveland, and Plates, 1/4 in. and heavier, 1.80c., Cleveland. Dealers quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron and Steel Bars out of stock at 1.80c., but this price is being shaded, particularly on Iron Bars. Beams and Channels out of stock are 2.10c. to 2.15c., base. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.85c. Warehouse prices on Boiler Tubes, 2 1/2 to 5 in. are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 67 per cent. discount.

Old Material.—This branch of trade shows no improvement, there being practically no demand for any kind of Scrap. Local mills are running, but they have enough Old Material on hand to supply their immediate needs, and are not in the market. Scarcely any call for Cast Scrap is coming from melters. Very little trading is noted between dealers. Yard dealers are buying some mixed Scrap when they can pick it up at very low prices. The market is slightly weaker, but owing to the absence of sales prices are still largely nominal. Among the railroad offerings this week is a list of about 2500 tons by the Pennsylvania. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

Old Steel Rails	\$11.00 to \$11.50
Old Iron Rails	14.50 to 15.50
Steel Car Axles	16.00 to 17.00
Old Car Wheels	12.50 to 13.00
Relaying Rails, 50 lb. and over	21.00 to 22.00
Heavy Melting Steel	11.00 to 11.50
Railroad Malleable	12.00 to 12.50
Agricultural Malleable	11.00 to 12.00
Light Bundled Sheet Scrap	7.50 to 8.50

The following quotations are per net ton, f.o.b. Cleveland:

Iron Car Axles	\$16.00 to \$16.50
Cast Borings	5.00 to 5.50
Iron and Steel Turnings and Drillings	6.00 to 7.00
Steel Axle Turnings	7.50 to 8.00
No. 1 Busheling	10.50 to 11.00
No. 1 Railroad Wrought	12.00 to 12.50
No. 1 Cast	11.50 to 12.50
Stove Plate	10.00 to 10.50
Bundled Tin Scrap	8.00 to 9.00

Philadelphia.

PHILADELPHIA, PA., May 5, 1908.

New business comes out very slowly. Buying in nearly every line is practically at a standstill, pending probable action in the near future regarding prices. It has been a long time since buyers were so completely out of the market, but under existing conditions consumers will take on no further supplies, except in cases of absolute necessity, until they are satisfied that prices have reached the bottom. The meetings of the Iron and Steel committees, to be held in New York the present week, are therefore being looked forward to with considerable interest, as it is believed that the action taken, whether it be in favor of maintaining or reducing prices, will result in the placing of some of the business which has been temporarily held up. The volume of business which would come out, however, in either case is hardly expected to be large owing to the many other perplexing problems which still confront the trade at this time, and, until these have in a measure been taken care of, no genuine improvement in the Iron and Steel trades is anticipated. The financial situation is more encouraging, and the readiness with which the recent large loans have been placed is considered in a most favorable light.

Pig Iron.—The demand for Pig Iron has been confined strictly to requirements for immediate consumption, and sales during the week have been the lightest on record for a long period. There has been considerable feeling of the market, but there is absolutely no inclination to buy for forward delivery under existing conditions. Hope is expressed that some definite action regarding the prices of Pig Iron may be taken at Thursday's meeting of the Pig Iron and Ore Committee. The Eastern Pig Iron Association will hold a meeting on Wednesday to outline a plan to be presented at the meeting in New York, but it is difficult to say what the outcome will be. Some producers believe that it would be the best policy to maintain the present basis of prices; others favor a moderate reduction, while still others believe that an open market would be the best solution. It is also said that should the Eastern producers make any change in their present basis, it would not likely be with the idea of meeting the low figures talked of for Southern Iron, but rather to make an adjustment on which they would be able to take a fair share of the business naturally belonging to the producers in this territory. In any event, it is doubtful if any very extensive buying movement would set in. Consumers would probably take enough Iron for immediate needs and partly fill up deficiencies in their stocks, but unless the general business of the country shows some signs of material improvement, consumers will hardly be likely to make any heavy purchases for forward delivery in anticipation of their needs. The Eastern furnaces, which have maintained the basis of \$18.25 delivered for No. 2X Foundry, have made few sales during the past week. Outside interests have, as far as we can learn, made no further concessions, but have taken the bulk of the little business floating around at prices ranging from \$17.50 to \$17.75, delivered, for No. 2X Foundry. The tonnages sold have been small, ranging from carloads up to 50 tons for spot delivery. One of the pipe interests which was reported in the market for 2000 tons last week is understood to have bought 500 tons of Southern Iron against that inquiry, at a price under the basis of \$12, Birmingham. The same interest is in the market this week for 1500 tons of pipe iron. Sales of Southern Iron have been light. Sellers in some cases are not so willing to take lower figures, and we are told that a number of firm offers for fair tonnages on the basis of \$11.50, Birmingham, for No. 2 X Foundry, have been declined. Virginia Irons show but little activity, producers holding pretty firmly at the recent range of prices. There has been only a slight demand for Forge Iron, as the Bar mills are running irregularly, and what tonnages have been sold have been for prompt delivery. A sale of 300 tons is reported at full prices. Steel making Irons show no appreciable change. An inquiry is out for 500 tons of Low Phosphorus Iron. Basic Iron is quiet, there being no demand for this grade at the time. Prices show no change; in fact, hardly enough business has been done in any grade to establish quotations. The following range is named for delivery in buyers' yards, eastern Pennsylvania and adjoining territory, for the remainder of the second quarter:

Eastern Pennsylvania, No. 2 X Foundry	\$17.50 to \$18.25
Eastern Pennsylvania, No. 2 Plain	17.00 to 17.75
Virginia, No. 2 X Foundry	17.50 to 17.75
Virginia, No. 2 Plain	17.00 to 17.25
Gray Forge	16.00 to 16.75
Basic	17.25
Low Phosphorus	23.00 to 23.50

Ferromanganese.—Little new business has developed. Available stocks at seaboard have become quite small, and quotations are now mostly made subject to prompt shipment from abroad. Prices are still held at \$43 to \$44. Baltimore, although some importers will not sell at these figures.

Steel.—No improvement has developed in the demand. Orders coming in are for small tonnages, and mostly for prompt delivery. Specifications on old orders are light. Prices continue to be fully maintained. Ordinary Rolling Steel for delivery in this territory is quoted at \$29.20, with Forging Steel at \$31.20, the usual extras for high carbons and large sizes applying.

Plates.—Business still comes out slowly and is confined almost entirely to small lots for miscellaneous purposes. Some of the mills show a reduction in output for April, as compared with the previous month. Propositions requiring large tonnages are comparatively few, and while the trade is hopeful the outlook is scarcely as good as it was. Prices are unchanged. We quote as follows, for delivery in this territory:

	Carload.	Part	Cents.	Cents.
Tank, Bridge and Boat Steel	1.85	1.90		
Flange or Boiler Steel	1.95	2.05		
Commercial Firebox	2.05	2.10		
Marine	2.25	2.30		
Locomotive Firebox Steel	2.35	2.40		
The above are base prices for $\frac{1}{4}$ -in. and heavier. The following extras apply:				
3-16-in. thick		100 lb.		\$0.10
Nos. 7 and 8, B. W. G.			.15	
No. 9, B. W. G.			.25	
Plates over 100 to 110 in.			.05	
Plates over 110 to 115 in.			.10	
Plates over 115 to 120 in.			.15	
Plates over 120 to 125 in.			.25	
Plates over 125 to 130 in.			.50	
Plates over 130 in.				

Structural Material.—No large contracts have come out, although there has been a fair number of small orders and mills continue to operate on a fairly even basis. More inquiry seems to have come up for medium and small work, but nothing further than what has been pending has developed in the way of larger propositions. Quotations remain unchanged at 1.85c. to 2c., according to specifications.

Sheets.—A slight improvement is to be noted in the demand for Sheets. Orders show no increase in tonnage, but are in larger number. Consumers' stocks are reported as being very low, and orders received are for the greater part for urgent delivery, there being no buying for forward shipment. Quotations range as follows for mill shipment, with a tenth more for small lots: Nos. 18 to 20, 2.50c.; No. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

Bars.—The demand is light and the market is dull. Specifications on low price Bars come out slowly, while fresh business is practically at a standstill. With low price Bars still on the market, not much business can be expected to develop at the established basis. Quotations for refined Iron Bars range from 1.46c. to 1.65c., delivered in this territory.

Coke.—Business comes out slowly and sales during the week have been small and confined almost entirely to Foundry Coke. Owing to the inactivity of blast furnaces, the demand for Furnace Coke is almost nil. Foundry Coke is quoted at \$2.15 to \$2.40 at oven, with Furnace Coke at \$1.65 to \$1.85 at oven. For delivery in this territory the following range of prices is quoted:

Connellsburg Furnace Coke	\$3.80 to \$4.00
Foundry Coke	4.30 to 4.55
Mountain Furnace Coke	3.40 to 3.60
Foundry Coke	3.80 to 4.10

Old Material.—Business is practically at a standstill. Mills in this territory show no interest in the market, although some small lots of cheap Scrap have been taken. Borings are a little stronger, due to purchases made in other territories, which have reduced the immediate supply. The general tendency of the market, however, is not strong, and prices are quoted nominally for prompt shipment, delivered in buyers' yards, eastern Pennsylvania and adjoining territory, as follows:

No. 1 Steel Scrap and Crops	\$12.75 to \$13.25
Low Phosphorus	17.50 to 18.00
Old Steel Axles	17.50 to 18.00
Old Iron Axles	20.00 to 21.00
Old Iron Rails	17.00 to 18.00
Old Car Wheels	14.00 to 15.00
Choice No. 1 R. R. Wrought	15.00 to 15.50
Machinery Cast	15.00 to 15.50
Wrought Iron Pipe	11.50 to 12.00
No. 1 Forge Fire Scrap	11.50 to 12.00
No. 2 Light Iron	9.00 to 10.00
Wrought Turnings	8.75 to 9.25
Stove Plate	11.00 to 11.50
Cast Borings	7.75 to 8.25
Grat. Bars	11.75 to 12.25

The firm of Frank Samuel, Harrison Building, Philadelphia, has purchased the two blast furnaces of the Lehigh Steel & Iron Company, at Allentown, Pa., and will dismantle them.

Metal Market.

NEW YORK, May 6, 1908.

Pig Tin.—The statistical position viewed from the standpoint of holders of the metal is less promising. The total visible supply throughout the world on April 30 was 13,241 tons compared with 9839 tons the same date last year. It is true, however, that visible supplies have decreased approximately 2000 tons since the end of March. The computed deliveries into consumption in the United States in April were figured as 3000 tons. The deliveries for the last four months show a decrease of 4000 tons compared with the same period last year, and in the same time European deliveries have shown an increase of approximately 400 tons. Stocks in the United States April 30 were figured as 1135 tons. Business during the week has been small, and consumers apparently have covered their requirements for some time. Price changes have been toward lower levels, as follows:

	Cents.
April 29	32.20 to 32.25
April 30	31.80
May 1	31.55 to 31.65
May 2	31.75
May 4	31.75
May 5	31.45
May 6	31.05

Stocks here are ample for present requirements; the arrivals this month amounting to 1145 tons. There are afloat for American ports 1768 tons. The London market declined sharply to-day, closing at £139 15s. for spot and futures.

Copper.—Little change is observed in the market. Electrolytic is available for domestic consumption at between 12.60c. and 12.70c., net cash. Lake, although firmly held by some producers at 13c. is offered by other producers and second hands at 12.87½c. Domestic buying has been small, but there are numerous inquiries in the market at a shade under present quotations, and if the metal recedes much toward the average cost of production, 12c., there is likely to be considerable buying by consumers in this country. It is observed also that melters here are buying from tired second-hand holders. The surprising thing about the situation is the large consumption in Europe, it having exceeded the expectations of practically everybody, and even now after the phenomenal exports for some time, European melters are buying for early shipments. A fair European demand also exists for Copper Scrap and considerable has been exported. Those interests would probably come into the market and buy freely if metal should be offered at any great concessions from prevailing prices. The statistical situation in Copper is undoubtedly improving. Production in North America is running from 60 to 70 per cent. of normal, and the stocks held are no longer a great depressing factor. Prices are so near the cost of production that there is immeasurably less danger of carrying supplies. The carrying cost is only one-quarter of what it was a year ago—that is, Copper is now selling at half what it was a year ago and interest rates are also one-half of last year's figure. Not only that but funds can be readily obtained. The needed thing in the Copper market, however, is some better figures of production and stock on hand. To publish these figures from trustworthy sources would have no detrimental effect on prices at this time and would serve to keep the market steadier. Exports during April were large, amounting to nearly 32,000 tons. The total exports this year aggregate 111,000 tons, against 57,000 tons in the same period last year. Some manipulation is evident in London from the large transactions. Prices there are about 5s. higher than last week at £57 12s. 6d. for spot and £58 7s. 6d. for futures.

Waterbury Average.—The Waterbury average for April was 13c.

Spelter.—The plan to export Spelter has flattened out. While it would have been easy to have shipped 5000 or perhaps 10,000 tons, this would have had no great effect on the accumulated surplus of metal, which is evidently between 40,000 and 50,000 tons. Moreover, the producers of the better grades, while loudly applauding the action of the others, would do little or nothing to aid them. Conditions are, therefore, little changed from a month ago. Prime Western brands are quotable in New York at 4.65c. to 4.70c., and in St. Louis at 4.50c. to 4.55c. Brass Mill Special is held at 4.75c. to 4.80c.

Lead.—The consumption of Lead is good, and prices have been advanced another 10 points, 4.20c. being now quoted in New York and 4.10c. in St. Louis. A rather peculiar thing is that the European market is declining as this is advancing, and present quotations there, £13 15s., are the lowest of the year. The American Smelting & Refining Company is taking the bulk of the business. This interest is not booking orders for delivery beyond the middle of June at today's prices. The market was strong this afternoon, and there is a possibility of a further advance.

Nickel.—Quotations continue unchanged, at 45c., for ton lots, and 50c. to 60c., for smaller quantities.

Antimony.—Prices of this metal are low, and in spite

of higher quotations abroad, the American market continues irregular. Cookson's can be had at 8.75c. to 8.87½c.; Hallett's at 8.50c. to 8.75c., and outside brands at 8.25c. to 8.50c.

Tin Plate.—Business continues in good volume and prices are firm. For 100-lb. IC Coke Plates \$3.89 is quoted, New York, and \$3.70, Pittsburgh. Welsh Tin Plates are 1½d., lower in Swansea at 12s. 6d.

Ferroalloys.—The demand for Ferromanganese has improved. Some orders for round lots as well as smaller quantities were taken last week at \$43.50, seaboard, and about \$45.50, Pittsburgh. Although some of this was for last half delivery, the bulk was for prompt shipment. Importers are unwilling to make contracts at prevailing prices for large second half deliveries. Inquiries have likewise been more numerous. The market for 50 per cent. Ferrosilicon is quite unsettled, and as low as \$70 is heard.

Old Metals.—Prices are easier. The domestic demand is small, but foreign consumers are buying Scrap freely. Dealers' selling prices are as follows:

	Cents.
Copper, Heavy and Crucible.	12.00 to 12.25
Copper, Heavy and Wire.	11.75 to 12.00
Copper, Light and Bottoms.	11.00 to 11.25
Brass, Heavy.	9.00 to 9.25
Brass, Light.	7.00 to 7.50
Heavy Machine Composition.	11.50 to 11.75
Clean Brass Turnings.	8.00 to 8.50
Composition Turnings.	9.00 to 9.50
Lead, Heavy.	3.90
Lead, Tea.	3.55
Zinc, Scrap.	3.50

Baker & Co., Inc., platinum, gold and silver refiners, of Newark, N. J., and New York City, announce the removal of their New York office to the sixth floor of the Cortlandt Building, Hudson Terminal, with entrance at 30 Church street.

New York.

NEW YORK, May 6, 1908.

Pig Iron.—The market has been exceedingly quiet, and the tone is easier. The feature continues the offering of Southern Iron at prices considerably below those of the Northern producers. We quote, at tidewater, as follows: No. 1 Northern Foundry, \$17.50 to \$18.50; No. 2 Foundry, \$17.25 to \$18.25, and No. 2 Plain, \$16.50 to \$17. Alabama Irons are \$16.50 to \$16.75 for No. 1 Foundry, and \$15.75 to \$16.25 for No. 2 Foundry.

Steel Rails.—Aside from some sales of Steel Rails for export, there has been no business. The fact is being observed that the same railroad companies are not, as usual, placing orders for the year's requirements at once, but are negotiating for only that part which they expect to use in the following few months.

Structural Material.—Business in this line appears to be improving. Small orders have been increasing in number, and a better disposition is shown by those who have important contracts to place. The impression seems to be gaining ground that no advantage is to be secured by waiting for reduced prices. It is noteworthy that some of the fabricators who have been making lowest prices on finished work are beginning to cover their requirements for plain material. They are evidently becoming convinced that Steel prices are not to be reduced. The bridge over the Lehigh River, to be built by the Lehigh & New England Railroad, requiring about 1400 tons, was secured by the Pennsylvania Steel Company. The Baltimore Bridge Company has taken the contract for furnishing and erecting the Steel work of the Baltimore Masonic Temple, 620 tons. Some bridge work is shortly to come out for the Chicago & Northwestern and for the Chicago, Milwaukee & St. Paul. The Harriman lines will shortly be in the market for their season's bridge work requirements, probably exceeding 10,000 tons. The first section of the New York Central terminal improvement in this city, requiring 3500 tons of Steel, will probably be undertaken soon, as the American Bridge Company has been asked to execute the formal contract. This company secured a total of about 19,000 tons of fabricated work for the month of April, which is the best month's business so far this year. The mills report orders for plain material considerably better than for several weeks. On mill shipments, delivery at tidewater, quotations are as follows: Beams, Channels, Angles, and Zees, 1.86c.; Tees, 1.91c. On Beams, 18 to 24 in., and Angles over 6 in., the extra is 0.10c. Material cut to length is sold from stock at 2½c. to 2½c.

Bars.—Prices of Iron Bars show no improvement. Dealers and brokers appear to have enough unfilled orders on hand to enable them to supply the limited current demand at about 1.50c., New York, although the mills are quite generally maintaining their quotation of 1.50c., Pittsburgh, or 1.66c., New York. Steel Bars are held at 1.60c., Pittsburgh, or 1.76c., New York.

Plates.—Local trade is light and mills are receiving few orders from this vicinity. Prices are firmly held as follows on standard sizes of Plates, at tidewater: Sheared Plates, 1.86c. to 1.96c.; Flange Plates, 1.96c. to 2.06c.;

Marine Plates, 2.26c. to 2.36c.; Fire Box Plates, 2.75c. to 3.50c., according to specifications.

Cast Iron Pipe.—The city of New York is advertising for water works extensions which will require about 2800 tons of 30-in. Pipe, on which bids will be opened May 13. The city will not purchase the Pipe directly from manufacturers, as the work will be let to contractors, who will buy the material. General business is exceedingly dull, being apparently restricted to an occasional carload or two. This branch of trade is now in about the worst condition experienced since the panic. It is likely that some foundries that have hitherto been quite active will shortly close if trade does not improve. Carload lots of 6-in. are quoted at \$23.50 to \$24, per net ton, tidewater.

Old Material.—The market shows little improvement. Possibly Cast Scrap is slightly more active, as foundries appear to be doing more in New England, where the machine shops are running a little better. Old Car Wheels, singularly enough, are weaker than Cast Scrap, and prices of these materials are steadily getting closer together. A very large accumulation of Old Car Wheels is pressing on the market. Some improvement has been observed in the demand for Relaying Rails. Rerollers are wanted, but at very low prices. Steel Scrap is quiet, the demand being restricted to small lots. Quotations are about as follows, per gross ton, New York City:

Old Girder and T Rails for melting.	\$9.50 to \$10.50
Heavy Melting Steel Scrap.	9.50 to 10.50
Old Steel Rails, rerolling lengths.	10.50 to 11.50
Relaying Rails.	19.50 to 20.50
Old Iron Rails.	14.00 to 15.00
Standard Hammered Iron Car Axles.	15.50 to 16.50
Old Steel Car Axles.	14.00 to 14.50
No. 1 Railroad Wrought.	11.50 to 12.50
Iron Track Scrap.	9.50 to 10.50
No. 1 Yard Wrought, long.	10.50 to 11.50
No. 1 Yard Wrought, short.	9.50 to 10.50
Light Iron.	5.00 to 6.00
Cast Borings.	4.50 to 5.50
Wrought Turnings.	6.00 to 7.00
Wrought Pipe.	9.00 to 10.00
Old Car Wheels.	14.00 to 15.00
No. 1 Heavy Cast, broken up.	13.00 to 14.00
Stove Plate.	9.00 to 10.00
Locomotive Grate Bars.	9.50 to 10.50
Malleable Cast.	10.50 to 11.50

Iron and Industrial Stocks.

NEW YORK, May 6, 1908.

The market on iron and industrial stocks has been quite firm, but at a somewhat lower range than during the previous week. The fluctuations have been comparatively narrow. The range of prices on active stocks from Thursday of last week to Tuesday of this week has been as follows: United States Steel common 35½ to 36½, preferred 100 to 102%; Car & Foundry common 34½ to 36; Locomotive common 46½ to 48%; preferred 100 to 100½; Steel Foundries common 67%, preferred 31 to 32½; Cambria Steel 29½ to 30; Colorado Fuel 24 to 25½; Crucible Steel common 5 to 5½, preferred 38 to 39%; Pressed Steel common 27½ to 29½, preferred 84 to 87; Railway Spring common 35 to 36½; Republic common 17 to 18, preferred 66½ to 67½; Sloss-Sheffield common 44½ to 45½, preferred 89½ to 93; Cast Iron Pipe common 24½ to 25½, preferred 72 to 73; Can common 5½, preferred 54 to 55. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 36%, preferred 100%, ex-div., bonds 95%; Car & Foundry common 36½, preferred 96%; Locomotive common 50%, preferred 101; Colorado Fuel 25%; Pressed Steel common 30%, preferred 87, ex-div.; Railway Spring common 35; Republic common 18, preferred 67½; Sloss-Sheffield common 46%; Cast Iron Pipe common 25, preferred 73.

Dividends.—The Roane Iron Company, Chattanooga, Tenn., has declared the regular quarterly dividend of 1½ per cent.

The American Radiator Company has declared the regular quarterly dividend of 1¼ per cent. on the preferred stock, payable May 15, and 1 per cent. on the common stock, payable June 30.

The Association of American Steel Manufacturers.

The annual meeting of this association was held May 2 at the Lincoln Hotel, Pittsburgh. It is composed of the leading steel manufacturers, and interests itself in technical matters pertaining to the business. Among the topics considered, it was resolved to renew the effort that was made some years ago to dispense with all systems of numbered gauges in specifying the thickness of all light rolled sections and to encourage the use of micrometer measurements. The following officers were elected: President, W. A. Bostwick, metallurgical engineer, Carnegie Steel Company; vice-president, A. A. Stevenson, superintendent, Standard Steel Works Company; secretary-treasurer, Jesse J. Shuman, inspecting engineer, Jones & Laughlin Steel Company, Pittsburgh, Pa.

The Rail Business in Canada.

TORONTO, May 4, 1908.—Blast furnace No. 1 of the Algoma Steel Company's plant was blown out on Saturday, and No. 2 is to be put out of blast this week. That means a complete cessation of productive work at this plant. The company's explanation of the stoppage is that the railroads are not offering business enough to keep the works going, and the reserve of the railroad people in the matter is attributed to financial conditions.

Financial conditions, however, cannot be the deterrent, for, as was stated last week in these columns, Canadian railroad building has received no discouragement from the money market. So far as the grand features of current railroad enterprise are concerned, they are well supported. In the case of the Grand Trunk Pacific the national credit is pledged, and that the national credit is high is shown by the success of the Dominion Government's recent loan of £300,000. These 3½ per cent., 42-year bonds, were sold at par, and the issue was much oversubscribed, notwithstanding that at the time of the transaction a state of ease had not yet come to the London money market. Besides the \$14,600,000 thus raised, \$16,600,000 has been raised since August by the sale of Treasury bills and on short term loans. Much of this will have to be funded in the near future, and another loan of £4,500,000, which matures in November, will have to be renewed. It is understood the Government has good reason to expect that its forthcoming issues will receive at least as good a demand as the spring issue had. Up to the close of the fiscal year on March 31 the Government had expended \$26,000,000 on the National Transcontinental Railway. For the current fiscal year an appropriation of \$30,000,000 for the National Transcontinental Railway has been voted. As for the Grand Trunk Pacific division of that highway, the company has the backing of the Grand Trunk Railway Company and has the guarantee of the Dominion Government on its bonds. If the National Transcontinental Railway is not now affording a demand for rails it is not because of financial disability.

The Canadian Pacific Railway Company's financial position is at the present time particularly strong, as indicated by the success of its latest flotations and its very large cash surplus, the high level at which its stock stands. At the outset of the season of growth the prospects of the West never looked brighter. Seeding has come three weeks earlier than it did last year, and the weather is daily reported to be ideal. Settlers flocked in from the United States this spring the same as if there had been no crop disappointment or financial stringency in the Canadian West last fall. The Canadian Pacific Railway people are in good heart, and can have no anxiety as to ways and means for improvements and the new construction it has mapped out.

Public credit largely underlies the Canadian Northern Railway Company, whose bonds have the guarantee of the Provincial governments and in some cases of the Dominion Government. Its lands are a splendid asset, inasmuch as they are bound to advance in value rapidly. It is possible the company may not spend much in extension, but will put more money in terminal improvements and equipment, as it has need of large expenditure on both accounts.

Robert W. Hunt & Co., engineers, Chicago, have established an analytical chemical laboratory in connection with their St. Louis office, 1445 Syndicate Trust Building. In addition to general analytical work, particular attention will be given to analyses of and advice on iron foundry mixtures. This work and the laboratory will be under the direction of J. B. Emerson, who for several years has had charge of the metallurgical part of the wheel foundry of the Mt. Vernon Car Company.

Third Vice-President O'Leary of the Iron Molders' Union, who has been canvassing the locals throughout the United States, is reported as stating that only about 30 per cent. of the iron molders are employed.

The Ways and Means Committee to Gather Tariff Data.

WASHINGTON, D. C., May 5, 1908.—Formal action looking toward the comprehensive revision of the tariff early in the Sixty-first Congress was taken April 30, when Mr. Payne of New York, chairman of the Ways and Means Committee and the majority leader on the floor of the House, introduced a resolution authorizing his committee to sit during the coming recess to gather information to be made the basis of a general overhauling of the tariff schedules. The text of this resolution is as follows:

Resolved, That the Committee on Ways and Means is authorized to sit during the recess of Congress and to gather such information, through Government agents or otherwise, as it may deem fit, looking toward the preparation of a bill for the revision of the tariff; and said committee is authorized to purchase such books and to have such printing and binding done as it shall require, and, in addition to requiring the attendance of the committee stenographers, is authorized to employ an additional stenographer and to incur such other expenses as may be deemed necessary by said committee; and all the expenses of said committee shall be paid out of the contingent fund of the House on the usual vouchers as now provided by law.

Mr. Tawney of Minnesota, chairman of the House Committee on Appropriations, is the prime mover among the Republican members of the House in the campaign to commit the majority to the revision of the tariff in the Sixty-first Congress. Several weeks ago he drafted a resolution authorizing the Ways and Means Committee to sit during the recess, and soon induced the Speaker to recognize the advisability of giving the public some pledge of the intentions of the majority. Subsequently he induced Chairman Payne and Mr. Dalzell of Pennsylvania to accept the same view, and Mr. Payne thereupon agreed to present the resolution himself.

Broad Scope of the Resolution.

It will be noted that the resolution introduced by Mr. Payne does not hamper the committee by specific instructions, but leaves it free to pursue any line of investigation that may be deemed appropriate and advisable. The resolution was sent to the Committee on Rules, which is composed of the Speaker, Messrs. Dalzell of Pennsylvania and Sherman of New York, Republicans; Mr. Underwood of Alabama, a member of the Ways and Means Committee, and Mr. De Armond of Missouri, Democrats. It will undoubtedly be adopted before the summer recess. The Senate Finance Committee will also be authorized by a special resolution to sit during the coming recess, but as the House must originate tariff legislation the burden of the preliminary work will fall on the Ways and Means Committee.

Whether hearings on the tariff will be granted to representatives of the various industries during the coming recess has not yet been determined, but it is improbable that any such hearings will be held before the November elections. The committee may take the testimony of members of the Board of General Appraisers, Treasury officials and other experts before the schedules are considered in detail and before either manufacturers or importers are invited to give their views. It will be noted, however, that the committee will be fully equipped under the resolution to pursue any line of inquiry that may be deemed advisable.

Administrative Laws May Be Amended.

As the result of representations made to prominent members of the Senate Finance Committee by members of the Board of General Appraisers and others, it is probable that an effort will be made to amend the customs administrative laws before the adjournment for the summer recess, which has now been postponed until approximately June 1. A bill providing for a number of important changes in the customs administrative act of June 10, 1890, was recently reported from the Ways and Means Committee and has just been passed by the House. The general provisions of this bill were recently fully described in this correspondence.

The measure as passed by the House was not altogether satisfactory to the Treasury Department and to the Board of General Appraisers, however, and as the

leading members of the Finance Committee deemed it advisable to defer action until after the next general revision of the tariff the bill was pigeonholed. Within the past few days, however, representations have been made to the committee that certain features of the administrative laws should be modified at the earliest practicable date, and the committee is now disposed to take action, especially in view of the deferred adjournment of Congress. It seems probable that the Finance Committee will redraft the House bill and report it as an amendment or substitute. If recommended by the committee the Senate will pass the bill without delay and it is believed the Ways and Means Committee will accept it in lieu of the measure which has already gone through the House.

W. L. C.

Customs Decisions.

Dutiable Status of Mexican Zinc Ores.

The United States Circuit Court at Laredo, Texas, has handed down a decision in a case between the Government and the importers, which has attracted much attention. It involved the dutiable status of various zinc ores imported from Mexico. The smelting companies in the United States, headed by the New Jersey Zinc Company, insisted that these ores should be free of duty. The zinc miners of the United States, on the other hand, headed by the interests in Joplin, Mo., insisted that they should pay 20 per cent. ad valorem as a protection to the domestic industry. The Treasury Department took the view of the miners and levied the duty accordingly. The court now upholds the contention for free entry and overrules the Government's claim for a 20 per cent. duty.

The case was sharply contested before the Board of General Appraisers, the Government being represented by special counsel retained by the Joplin people, while the New Jersey Zinc Company and others interested on that side were also represented by counsel. The trial before the Board of Appraisers occupied several days, and the case was finally decided against the Government and in favor of the importers. Thereupon the Government brought suit in several different districts of the United States, and during April of last year the case was elaborately argued by counsel on both sides, who went from New York to Houston, Texas, for the purpose. The case was heard by Judge Burns, in the United States Circuit Court, and it must have been a perplexing problem, for over a year has elapsed without a decision. He has now rendered the decision indicated above, and as the matter is one of great importance to both sides there is no doubt that the Government will appeal the case to the United States Circuit Court of Appeals, and it probably will be argued next winter in New Orleans.

The smelting interests were represented in this litigation by Wm. Wickham Smith and by Howard T. Walder of New York, and the special counsel who tried the case for the Government was Everit Brown, also of New York. Mr. Brown was asked to make a statement in the matter, and said: "I presume that the court felt itself to some extent bound by a prior decision in a higher court which involved one of the legal questions in this very complicated case. If this is the fact it is no surprise to the Government, and was anticipated at the commencement of the litigation. The Government started this matter with the expectation of carrying it to the higher courts and will be by no means dismayed by any decision of lower tribunals."

It is said that in detail the merchandise is of two kinds. One kind, which is claimed to be calamine, is carbonate of zinc ore, and the other kind is sulphide ore (or "blende"), which has been concentrated. These were all assessed for duty at 20 per cent. ad valorem as metallic mineral substances in a crude state. The importers claim the carbonate of zinc to be free of duty under the provision in the free list of the tariff for "calamines," and they also claim that all the ores of both kinds are in any event free of duty under another provision in the free list, which reads: "Minerals, crude or not advanced in value or condition by refining or grinding, or by other process of manufacture, not specially provided for in this act."

Lace Curtain Machinery.

The Board of United States General Appraisers has decided that parts of lace curtain and other machines, drilled, bored, planed, fitted and finished, cannot be admitted under the customs classification for "castings," as contended for by the Lehigh Mfg. Company, the North American Lace Company and others. Under the plea of the importers the parts would stand a duty of only eight-tenths of 1 cent per pound. It was the contention of the Government, however, that the articles should stand duty at the rate of 45 per cent. under the provision in the tariff for "manufactures of metal." General Appraiser Fischer, who writes the decision for the board, is unable to sustain the claim of the importers. He says in part:

We regard the collector's assessment as correct, and as in accordance with the rulings of the courts and this board. As finished parts of machinery the so-called castings are something more than the "castings of iron, not specially provided for," under paragraph 148 of the tariff. That provision has been limited to articles which are complete after the process of casting, and does not include such as are further manipulated, or which have been subjected to a finishing process subsequent to being cast. We hold, therefore, that they are not classifiable as castings, and overrule the protests.

Sundry Decisions.

It has been decided by the United States Circuit Court of Appeals at New York that pulverized corundum ore must stand duty at the rate of 1 cent a pound, under paragraph 419 of the tariff act, by similitude to emery. It was maintained by F. W. Myers & Co., the importers, that the commodity should be admitted free of duty as "manufactured sand."

The Board of Appraisers in refusing to reduce the assessment of duty on water pails and sprinkling pots imported by John Wanamaker of New York and Philadelphia, lays down the rule that articles of utility cannot be regarded for dutiable purposes as "toys." The Treasury Department exacted duty on the articles as manufactures of metal at 45 per cent. The contention of the importer for duty at 35 per cent. is overruled.

The John A. Roebling's Sons Company has won a contention with the Government for lower duty on importations of round steel wire valued over 4 cents per pound. Duty was assessed on the merchandise at the rate of 2 cents per pound, whereas a claim was made for assessment at 40 per cent.

Sale of the Tula Iron Works, Mexico.—According to a press dispatch dated April 16 from Guadalajara, Jalisco, Mexico, the iron ore mines and iron works in the Cocula District of the State of Jalisco, through a transaction just closed, have been transferred to Daniel Ochoa, a capitalist and shoe manufacturer of the city of Guadalajara. The dispatch adds: "On several occasions in the last few years the sale of the properties to American interests appeared probable, but in each instance the deal failed of consummation. It is stated that Mr. Ochoa will now devote his attention principally to the manufacture of iron, and that the Tula product will be exported through the port of Manzanillo, as well as supplied to the domestic markets. In the transfer the iron mines and works were considered to be worth \$900,000." A few months ago negotiations were opened for the purchase of this property on behalf of American capitalists. The preliminary steps ended in a lawsuit in the Mexican courts.

Beginning on Saturday, April 25, the navies of several countries have had a string of accidents. On that day the American liner St. Paul sunk the British second class cruiser Gladiator off the south coast of England, resulting in the drowning of 23 of the British crew. On the following Tuesday, while a British fleet was maneuvering off the English coast, the cruiser Attentive rammed and crippled the torpedo boat destroyer Gala, and sheering off collided with and knocked a hole in the destroyer Ribble. On the same day a boiler exploded on the British battleship Britannia, injuring three men. On Wednesday, while the German battleship Elsass was at practice off Kiel, a cartridge exploded prematurely, killing two and injuring six men. On Thursday the Japanese cruiser Matsushima was sunk by an explosion in its magazine while anchored off the Pescadores Islands, near Formosa, causing the loss of over 200 lives.

The Machinery Trade.

NEW YORK, May 6, 1908.

The business transacted the past week was not of sufficient volume to show an improvement in the demand for machinery over that of the previous weeks, and was of a character to indicate no immediate betterment. The important interests are still out of the market and no large projects have developed. Consequently the orders cover small lots of tools, and in most cases those of the lighter class. With a few houses these small orders have slightly increased in number, but with others trade is as dull as it has been at any time since the spurt in March; in fact, some report business at the opening of the month more quiet and fewer orders in sight. The inquiries now before the trade are not of an encouraging nature, and these, coupled with the reports of further curtailment of forces or cutting down of hours in some of the representative plants, are not indicative of a change from the present dullness. Bids for large excavation work will soon be opened, notably the Fourth Avenue Subway in Brooklyn, and manufacturers are awaiting the award of contracts for the latter work, as it will necessitate the use of a great deal of mechanical equipment. Manufacturers and dealers have figured up their sales for April and with few exceptions find that their business fell off considerably from that of March, in some cases to the level of that of February.

Convention Notes.

The programme for the joint convention of the Southern Supply and Machinery Dealers' Association, the National Supply and Machinery Dealers' Association and the American Supply and Machinery Manufacturers' Association, to be held at Richmond, Va., May 13, 14 and 15, has been arranged. On Wednesday morning, May 13, separate executive sessions will be held by the organizations and on Wednesday afternoon there will be a joint open session, at which an address will be made by C. H. Briggs, president of the Southern Supply and Machinery Dealers' Association. Remarks will also be made by George Puchta, president of the National Supply and Machinery Dealers' Association; M. W. Mix, president of the American Supply and Machinery Manufacturers' Association, and the address of the day will be delivered by William H. Taft, Secretary of War. A smoker and vaudeville performance will take place that evening. On Thursday morning a joint executive session will be held, when the following papers will be read: "Resale Prices," by F. A. Hall, Yale & Towne Mfg. Company, New York; "Salesmanship," W. E. Gerow, Atlantic Supply Company, Jacksonville, Fla.; "Plain Talks to Jobbers," D. K. Swartwout, Ohio Blower Company, Cleveland, Ohio; "Advantages of Co-operation in Supply and Machinery Business," W. M. Pattison, W. M. Pattison Supply Company, Cleveland, Ohio. On Thursday afternoon there will be two executive sessions one of which will be attended by members of the Southern Supply and Machinery Dealers' Association and the National Supply and Machinery Dealers' Association, who are engaged in the machinery business, and the other will be for members of the American Supply and Machinery Manufacturers' Association. At the banquet in the evening the following addresses will be made: "Commercial Fraternity," C. A. Moore, president Manning, Maxwell & Moore, New York; "Benefits Derived from Trade Organizations," Robert Wuest, commissioner National Metal Trades Association, Cincinnati, Ohio; "The Ladies," Hon. John Garland Pollard, Richmond, Va. Separate executive sessions will be held on Friday morning, at which officers of the respective associations will be elected, resolutions and reports disposed of, and other trade matters threshed out, and joint executive sessions will be held in the afternoon. Trolley rides and luncheons have been arranged for the entertainment of the ladies accompanying the members.

The spring convention of the National Machine Tool Builders' Association will be held on Tuesday and Wednesday, May 19 and 20, at the Hotel Chalfonte, Atlantic City, N. J. A large contingent of the members of the association have signified their intention of attending, and it is expected that the convention will be a large one.

From all accounts the New York Central & Hudson River Railroad will shortly do some machinery buying for improvements at a number of its shops. An expenditure of over \$900,000 is contemplated for improvements at Buffalo and points in western New York. This will include some additional purchasing for a boiler shop in course of construction at Depew, and about \$9000 will be spent for a boiler plant at West Lockport. A coaling station will be erected at Depew, and other improvements are to be made at West Batavia, East Buffalo and Buffalo. In addition to machinery purchases, it is understood that some signal equipment will be bought.

Considerable machinery will be required for equipping the new garage to be erected by the New York Taxicab Company, 546 Fifth avenue, New York. Contract for the construction of the garage, which, it is claimed, will be the

largest in the country, has been awarded. It will be located on Fifty-seventh street, near Eleventh avenue, at a cost of several hundred thousand dollars. The building will be 144 x 250 ft., five stories and basement, of steel, concrete and brick construction, and will be provided with inclined planes running from the street to the floors. Half of one of the floors will be used exclusively as a repair shop, this space being about 72 x 125 ft., and it will be equipped with lathes, milling machines, drills, presses and such tools as are generally used in the repair and manufacture of automobiles. The building will have accommodations for 1000 taxicabs.

A number of orders for machinery equipment have been placed in this market by Seymour & Whitlock, machinists, New Jersey Railroad avenue, Newark, N. J. This company has spent about \$17,000 in construction work, which has about doubled its plant, and machinery equipment is now being installed. The firm manufactures special machinery and acts as consulting and designing engineer.

A number of purchases have been made in this market of late of equipment for developing oil properties in Mexico, and there are inquiries out now for machinery for projects of the kind. The Oil Fields of Mexico Company, which has large properties in that country, is arranging to construct a railroad from its works at Furbero, Vera Cruz, to the Port of Tuxpan, a distance of 50 miles. An oil pipe line which will parallel the railroad is also to be constructed, and this will necessitate the purchase of considerable pumping machinery and the like. The company's New York office is at 43 Exchange place and Percy N. Furber is president.

Plans for the new plant to be built by the International Engineering Company, Carter Building, Scranton, Pa., are progressing, and it is expected that they will be in shape so that the erection of the buildings can be commenced shortly. The company has secured an excellent site at Erie, Pa., where the buildings are to be constructed, and will soon be ready to take up the matter of equipment purchases.

The Hudson Structural Steel Company, 136th street and Southern boulevard, New York, whose new shop, 60 x 103 ft., was mentioned in these columns some time ago, has purchased the greater portion of the equipment for this shop. Some few tools have not yet been decided upon and they will probably be purchased this week.

The State Department of Public Works, Albany, N. Y., has awarded Barge Canal contract No. 45, which includes work at Baldwinsville, to Scott Brothers, Atlanta, Ga., at their bid of \$467,514.

The Gibbs Gas Engine Company, Peters' Building, Atlanta, Ga., has been organized to manufacture gas and gasoline engines for marine, automobile, electric lighting and general power work. It is the intention to install a new plant, but as plans have not yet been perfected the company has not yet decided upon the machinery that will be required.

Business Changes.

The Standard Gauge Mfg. Company, Syracuse, N. Y., manufacturer of indicating gauges for all purposes, has moved its New York branch from 141 Broadway to room 1770, Hudson Terminal Building. The change was made in order to obtain more spacious quarters for the display of a large line of engineering specialties, as well as to be in the center of the engineering district. The Western branch of the company is located in the Monadnock Building, Chicago, Ill.

Perkins & Frecker, 136 Liberty street, New York, dealers in machine tools, have been appointed Eastern agents for the Cincinnati Chuck Company, Cincinnati, Ohio, manufacturer of high grade independent and universal lathe chucks.

The New York office of the Morgan Engineering Company, Alliance, Ohio, formerly located in room 507 Trinity Building, 111 Broadway, has been moved to room 1106 City Investment Building, 165 Broadway. E. J. Parker still retains the management of the company's New York office.

Chicago Machinery Market.

CHICAGO, ILL., May 5, 1908.

Features of important interest are wholly lacking in the machinery trade. The past week has brought out nothing more than a scattering lot of pickup orders, such as have constituted the majority of transactions for some time past. It is quite evident to manufacturers that as long as railroad retrenchment holds purchases within present limits there will be no fundamental improvement, and until this occurs the larger industries will have no need for additional equipment. Notwithstanding the discouragements of the present situation, hopes of early betterment are bolstered by the belief entertained by many that the railroads will soon be compelled to relax their extreme policy of curtailment and buy more freely. It is reasoned that the time is not far distant when preparations will have to be made for moving the future crop, and this will involve at least a large amount of car repair work; for it is well known that a large part of

the idle rolling stock is composed of bad order cars, which will require extensive repairs before being put into service. When this work begins it will certainly exert a beneficial influence upon the machinery trade, which will be measured by the extent of such activity. For the present, however, no new business of moment is coming from the railroads. There is, perhaps, a little better demand for motive power equipment and pumping machinery than is noted in other lines. This is due chiefly to the requirements of small municipal electric light and water works systems throughout the West, of which there are quite a number now in the market. Makers of large sized units in boilers and engines are finding little new business.

A project for the establishment of car shops at Ralston, Neb., formerly known as Seymour Park, six miles southwest of Omaha, is under way. This enterprise is being undertaken by the firm of Ralston & LeBaron, Fisher Building, Chicago, and contemplates the erection of four buildings, which will include an erecting shop, 100 by 300 ft.; wood work mill, 50 by 100 ft.; blacksmith shop and engine house, 50 by 100 ft., and a storeroom, 45 by 80 ft. The buildings are to be of wood frame sheeted with corrugated iron. It is designed to equip the shops throughout with modern machinery suitable for repair work and the building of new cars. While it is expected that in the beginning the shop will be run principally on repair work, it is the intention to develop gradually into the car manufacturing business. The promoters of this industry state that the preliminary work of organization has been completed and that within the next 30 or 60 days the work of construction will be in progress.

Manufacturers and dealers interested in boiler shop equipment are figuring on a set of plate bending rolls required by the Illinois Steel Company for installation in the North Works.

The Milwaukee Steel Fence Post Company, Milwaukee, Wis., recently incorporated with a capital stock of \$25,000 to manufacture tubular steel fence posts with detachable driving points, is in the market for a gear press with 2-in. stroke, capable of punching 1 in. hole through $\frac{1}{2}$ in. iron. A second hand tool, if in good condition, would meet the requirements.

Proposals for motive power and electrical equipment being asked for by the city of Calgary, Alberta, Canada, comprise the following units for installation in the municipal electrical generating station: One 1000 hp. reciprocating engine; one 750 kw., 3 phase, 60 cycle, alternating current generator; one direct connected steam driven excitor set, direct current, 120 volts, 30 kw.; one Tirrill automatic voltage regulator; switchboard of two panels; one station watt meter, daily recorder; alternate bids on one 750 kw. turbo generator, complete in all details. Bids will be received up to May 15, and detailed information can be had respecting this equipment by addressing V. Hill, city engineer.

A new electric light and water plant will be built at Spencer, Ind., by the Spencer Light, Power, Heat & Water Company, under the supervision of the Reliance Engineering Company, Cincinnati, Ohio. The equipment to be purchased for this installation includes two 100 kw. direct connected a. c. 2300 volt, 60 cycle, 3 phase generating units with automatic engines; one 72 in. by 16 ft. horizontal tubular boiler; a motor driven centrifugal pump of 700 gal. per minute capacity, against 100 lb. pressure; a direct acting compound duplex pump of 400 gal. per minute capacity against 50 lb. pressure; approximately 300 tons cast iron pipe in sizes ranging from 4 to 8 in.; 40 fire plugs with twin connections, fittings, &c.

J. J. and R. A. Nichols, owners of the local electric light plant at Soulsbyville, Cal., have recently installed a new 30 kw., 250 volt, direct current, Western Electric generator. Further equipment required will include one 30 hp. engine, for which the firm will be in the market soon.

Proposals for furnishing material, machinery and labor required in the construction of a water works system for the village of Deshler, Neb., will be received up to May 12 at the office of the village clerk. The equipment will include one tubular well, one deep well power pump, one gasoline engine, a steel tank and tower, together with the necessary pipe for distribution.

The Wilson & Friend Company, Chicago, Ill., has moved into larger quarters at 3130-3136 South Canal street, where it has floor space aggregating 30,000 sq. ft., which enables it to handle its increasing business with facility and dispatch.

The George H. Tay Company, San Francisco, is arranging to greatly increase its facilities for supplying all requirements of the engineering and heating trade, and will carry a complete stock of brass and iron valves, malleable, cast iron and drainage fittings, &c. It is also preparing to install an up to date machine shop and will shortly be fully equipped to cut and make up all sizes of pipe to sketch. This department is under the management of Theodore F. Dredge, for many years representing the Crane Company in San Francisco and elsewhere.

To improve its facilities the Sargent Steam Meter Company, Chicago, Ill., has moved its office and laboratory to 271-285 East Madison street.

Cincinnati Machinery Market.

CINCINNATI, OHIO, May 5, 1908.

The advent of May finds little improvement in the general situation, as to the output and sale of machinery and machine tools, but a reversal of April's debut which was most marked for an increase in inquiries with light sales, the sales being now a little freer, while inquiries have slumped off considerably. Many manufacturers are now putting out tools on consignment, and some whose shipments have been held up weeks and months are getting orders to forward them. Small and medium sized tools still have the call, but metal and wood working machinery, medium and small size units in power generating machinery represent the class most in evidence.

A number of large manufacturers whose specialties are tools have inaugurated a sort of renovation and repair régime in the shops and are making necessary improvements. Reports from other parts of this district, replies to questions propounded by *The Iron Age*, indicate that the situation with specialty manufacturers and structural steel and iron makers is very much improved, while little or no improvement is shown by returns of the steel and iron founders and tool manufacturers.

Nearly all the larger manufacturers of heavy and medium sized tools are able to offer what might be denominated bargains in slightly used or resale types. Dealers are finding a better and quicker response to offers and less difficulty is experienced in closing sales. If there is any cutting going on in this field the fact is very zealously guarded, and as a rule prices are being maintained.

The Cincinnati Punch & Shear Company is engaged on some special metal working machinery for large local and foreign concerns. This company has just delivered to the Globe-Wernicke Company, manufacturer of office supplies, a 10,000-lb. gate shear for motor drive, electric attachments furnished by the Triumph Electric Company of Cincinnati. It will be used in the manufacture of special metal fittings requiring the highest degree of accuracy. The company is now working on a heavy double 36-in. throat power punch, belt driven, for a concern in Seattle, Wash., and is finishing up a special wire forming machine for the Cincinnati Pump Company.

Shapers have led the past week in point of activity, several of the concerns making a specialty of that machine having sold good orders. The Queen City Shaper Company reports a sale during the week of five in one order—two 16, two 20 and one 24 in.—and another of six machines through a dealer—two 16, two 20 and two 24 in. This company is running on a schedule of 45 hr. per week, with but a small percentage less than normal force, having made it a rule throughout the period of depression to retain all its skilled workmen.

The G. A. Gray Company, Cincinnati, manufacturer of planers and other tools, has been making some improvements in all departments of its plant, including the foundry, in which new cranes have been installed.

The J. A. Fay & Egan Company, manufacturer of wood-working machinery, reports the sale to the United States War Department of 22 machines, including band saws, planers, &c., for shipment to the Philippines. The order was received on the last day of April, rounding out the best month of the year in that line.

A new type of clay cutting machine has been placed on the market by the Buckeye Traction Ditcher Company, Findlay, Ohio. The new machine is designed for work especially in marshy land where an open ditch is desired. The claimed advantages include an ability to run the 12-ton machine on land that would not support a team of horses through the utilization of automatic board walk that is available when the machine is running and is out of the way at other times.

The shops of the Hamilton Mfg. Company, Columbus, Ohio, are promised a steady run on a new coal storage machine which has just been successfully demonstrated in the coal and coke yards of the United States Steel Corporation at Gary, Ind. The machine is said to do the same amount of work in handling coal or coke in 10 min. that would require 10 men 10 hr. The company recently sold a machine to the Nova Scotia Iron & Steel Company for use in its Canadian shops.

A report from Lima, Ohio, says that the new Ohio Steel Castings Company, which has been shut down some months, is now in operation, with prospects good for a continuance.

A new safe and vault plant will be built by Chauncey and Walter Gross and George Cooper, Hillsboro, Ohio, capitalists. It is expected to have the plant in operation by July 1.

President E. S. De Tramble and Manager G. W. Lentz of the Union Embossing Machinery Company and the Speed Changing Pulley Company, Indianapolis, Ind., have announced the early beginning of operations on their new buildings, to be located on a 6-acre site at the crossing of the Big Four Railroad and St. Charles and Pitts streets in Anderson, Ind. The consummation of the company's plans

are dependent on the Anderson public's purchase of a number of building lots in the vicinity.

The Capital Lock-Nut & Washer Company, Columbus, Ohio, will hold its annual meeting and election May 14. This company has been in successful operation over two years. A. M. Gaines is general manager and William Singleton secretary.

E. J. Johnson and Frank Curry, superintendent and assistant superintendent, respectively, of the Block-Pollak Iron Company at Carthage, Cincinnati suburb, have resigned. It is announced that the active management of the plant will now devolve upon Morris and Julius Pollak, sons of President E. Pollak. It is understood that Mr. Johnson will make a European trip and that Mr. Curry will embark in the real estate business in Tennessee. Employees of the company on Saturday gave Mr. Johnson and Mr. Curry a surprise dinner, with Mayor W. W. Birch of Carthage as chairman, and the former was presented with a diamond ring and the latter a handsome watch fob.

The new foundry building of the Fort Wayne Electric Works at Ft. Wayne, Ind., is practically completed, and operations are to be commenced as soon as possible.

It is stated that the Montpelier Cut & Metal Works, Montpelier, Ind., has made some large shipments of West's sanitary fruit gatherers, and that the factory is busy to capacity making up stock for next season.

The Hubbard Foundry Company, Warren, Ohio, will begin operations soon with William Crowe, who was for a time superintendent of the Aetna Foundry & Machine Company, of Warren, as general manager.

Patents on a new rotary cutter to be used in the making of rugs from old carpet have been granted G. A. Bauer, manager of the Valley Mfg. Company, Springfield, Ohio, and the company has decided to manufacture the device on an extensive scale.

Cleveland Machinery Market.

CLEVELAND, OHIO, May 5, 1908.

The condition of the local machine tool market remains practically stationary, although some of the dealers see a slight improvement due to picking up of some scattering orders during the past week. While the outlook for business is slightly better than a month ago, the prospects, in view of the general industrial conditions, cannot be said to be very encouraging. Dealers, however, find some satisfaction in the fact that the volume of their sales during April was somewhat larger than for March, and that whatever change occurs from week to week, although it is small, is toward an improvement. The demand is almost entirely for single tools in small sizes, although several orders were placed during the week for two tools. About the only buying that is being done by large manufacturing plants is in cases where old tools are being thrown out and replaced with more modern equipment. Purchases by new concerns are mostly for small plants that need very few tools. Second-hand tools are moving very slowly. Plenty are being offered, but the demand is quite limited and dealers are not buying many.

The situation shows but little improvement with the tool builders, and manufacturers, as a rule, report only a slight improvement in their volume of orders. As a result their plants are running on about the same limited capacity that they have been for the past few months. While orders for heavy machinery show no improvement, inquiries are better. Prospective purchasers are very slow, however, in placing contracts. A number of Ohio towns will shortly install municipal lighting plants and other towns have such plants under consideration, so that there is a fair outlook for business in lighting plant equipment.

Activity in the building of new industrial plants and additions to existing plants shows some improvement. Local engineering firms are receiving more inquiries along that line, and contracts for the erection of large additions to two Ohio industrial plants were closed last week. A number of projected plants, however, are being held up until conditions grow better.

The local jobbing foundry trade is still about as dull as it could be. Users of castings are buying in very small lots for their immediate needs. While some foundries are holding up prices, others are making low quotations in their eagerness to get business to keep their plants running.

The Owen Bucket Company, Cleveland, has been incorporated, with a capital stock of \$10,000, to manufacture a new clam shell bucket, the invention of Owen W. Callaghan, who is president. W. H. Botten is vice-president; Herman Zirn, treasurer; J. H. Nieding, secretary, and C. T. Denly, general manager. The company will not erect a plant, but will make the buckets at the plant of the Zeman Iron Works Company, with which some of the officers are associated. The offices will be at the Zeman plant, 6824 Union avenue. It is claimed for the new bucket that it is the only one made that will handle clay. It is also designed to handle coal, ore and, in fact, everything except rock and shale. The bucket

will be made for the present in 1, 1½ and 2 yd. sizes. The company has already taken a number of orders for the new bucket.

The American Seeding Machine Company, Springfield, Ohio, maker of agricultural implements, will soon begin the erection of large additions to its plant, plans and specifications for which are being prepared by the Osborne Engineering Company, Cleveland. The additions will include a foundry 150 x 200 ft. and a manufacturing building 50 x 250 ft., three stories high. No additional power equipment will be bought, but the company will probably be in the market for some machinery.

The Cleveland Chain & Mfg. Company, which recently started in operation with a new plant at the Pennsylvania Railroad and Henry street, reports that orders are coming in very satisfactorily and that it is able to keep its plant running full time with a full force of men. The company makes machine and hand made welded chains, its products including steel loading chain and coil, crane, dredge and conveyor chains. The company announces that it is making a specialty of high grade chain and that its facilities for handling big business are unexcelled. The chain is made on patented hammers, with special straightening devices. The company's office is at 7625 Broadway.

At a meeting of the Fover Steel Stamping Company, Painesville, Ohio, a few days ago, it was decided to change the name to the Ohio Wheel Toy Company and to increase the capitalization from \$60,000 to \$100,000. The company will discontinue steel stamping work and engage in the manufacture of metal toys and specialties. About \$20,000 worth of new machinery will be added to the plant, a large part of which has already been contracted for.

A company is being formed in Cuyahoga Falls, to be known as the Peerless Match Company, to erect a match factory in that place. Plans have been prepared by Architect Frank Moore of Cuyahoga Falls for a saw tooth building, 80 x 150 ft., and a boiler and engine room. T. L. Childs of Akron is the promoter of the enterprise.

The Hydro-Electric Company, Warren, Ohio, recently organized, with a capital stock of \$100,000, to furnish light and power, has effected its organization by the election of the following officers: President, O. D. Morgan; vice-president, C. M. Wilkins, secretary and treasurer, Henry Herbert. The officers, with Roy Seigfried and D. E. Hoover, comprise the Board of Directors. Plans are being prepared for a power house and it is expected that work will be started soon.

With a capitalization of \$25,000 the Railway Safety Appliance Company, Akron, Ohio, has been incorporated by C. R. Grant, E. L. Mitchell, A. Le Croix, Jacob Brown and W. R. Price.

The concentric Engine Company, Columbus, Ohio, has been incorporated, with a capital stock of \$50,000, to build engines of a new pattern, the invention of F. M. Lechner. The incorporators are Joseph Segale, Charles J. Segale, F. M. Lechner, A. J. Lind, George W. Moling and J. B. Karns. A plant may eventually be built.

The Nute Foundry Company, Cuyahoga Falls, will erect an addition to its plant 25 x 45 ft. for cleaning castings. The company will install a sand blast.

The complete list of the machine shop and woodworking equipment for the new Technical High School, Cleveland, mention of which was previously made in this report, has been prepared by James F. Barker, principal of the school. Bids will be received by the Board of Education until June 1, and the tools must be delivered not later than July 1. The lists are as follows:

Machine Shop Equipment.—One universal milling machine, 8 x 34 in.; one 30-in. boring mill; 10 lathes, 14 in. x 6 ft., five of which are to have taper attachment; one lathe, 14 in. x 6 ft., direct connected and motor driven; one 14 in. x 6 ft. tie bar pattern Hendey Norton screw cutting engine lathe; one Warner & Swasey No. 1 hollow hexagon turret lathe; one solid head, back geared turret lathe, capable of taking stock of 1¼ in. diameter, 7 in. motion to slide and 15 in. from end of spindle to turret; one universal grinding machine, 12 x 30 in.; one motor driven grinder with spindle for ¾ x 8 in. wheel; one universal cutter and tool grinder, 6 x 16 in.; one portable, electric tool post center grinder with ¼-hp. motor; one drill grinder; one sensitive drill; one hand power arbor press; 22 10-in. 4-jaw reversible chucks; 17 8-in. 4-jaw reversible chucks; one 6-in. 3-jaw universal chuck; one 8-in. 3-jaw geared scroll chuck; three 7-in. 2-jaw universal chucks; eight sensitive drill chucks; one magnetic chuck; one gas furnace.

Woodworking Equipment.—Four 36-in. band saws, two scroll saws, one box frame universal saw bench, provided with two cast steel saw arbors, driven from a swinging yoke, and a two-section sliding table; one single cylinder double belted surfacer, 7 x 24 in.; 25 motor driven speed lathes, approximately 12 in. by 4 ft., each lathe to be provided with a direct connected motor, capable of a speed range of from 800 to 2400 rev. per min., and not less than ½ hp.; 31 wood turning speed lathes, 12 in. by 4 ft.; one jointer, 7 ft. by 8 in.; one 18-in. pattern maker's lathe, four iron frame power grindstones, four wood trimmers, one foot-power mortiser, one heavy foot-power mortiser.

Philadelphia Machinery Market.

PHILADELPHIA, PA., May 5, 1908.

The aggregate volume of business transacted by a number of manufacturers and merchants in the machine tool trade was hardly as large during the month of April as was hoped for. Gains over the previous month were few, but losses were not heavy, and, as a rule, the volume of business taken was pretty closely up to that of March and represents on the whole from 40 to 50 per cent. of normal business. The outlook for the coming month is believed to be much more favorable. While but a very small portion of the new funds can be expected to benefit the machine tool trade, the wholesome effect of the successful bond issue of the Pennsylvania Railroad cannot be overlooked. Some other forward movement by the railroads is to be noted in the appearance of the specifications of the Delaware, Lackawanna & Western Railroad for the equipment of its new shops at Scranton, Pa., which includes the expenditure of some \$30,000 for blacksmith shop equipment. These developments afford considerable encouragement to the trade, but it must be remembered that some time must elapse before any extensive plans or purchases can be made. The number of idle tools in industrial plants is large, the railroads have great numbers of idle cars and locomotives on their sidings, and until at least a fair percentage of these are again placed in active use we can scarcely look forward to any heavy buying movement as far as machine tools and equipments are concerned. Many tools undoubtedly are being used which would, were conditions better, be condemned and new equipment purchased, but under existing circumstances these are retained in service as long as possible. As soon as there is a definite revival in business a considerable volume of new orders can be expected to develop from these sources.

Manufacturers have been taking some few orders, principally for single tools. Plants are being operated on a very conservative basis, and the prospect for any marked increase in production in the near future is not strong. Orders taken cover a miscellaneous character of tools, mostly in the medium sizes. The foreign trade shows no change. Standard tools are in light demand, although there has been a little more business offering in specialties.

Second-hand machine tool dealers report a fair volume of business. This branch of the trade holds up pretty well, there being more inquiry for both metal and wood working machinery. Sales have been pretty well scattered, but reach a fair volume in the aggregate. The boiler and engine trade, both new and second-hand, is reported rather quiet.

Foundries have not taken on much tonnage, and what orders come out are for prompt shipment. Buyers are not placing contracts for future delivery, even at lower prices, and the greater proportion of the iron and steel casting plants are running irregularly and on a hand to mouth basis.

W. B. Powell, city architect, City Hall, is completing plans, it is understood, for a new pumping station, 95 x 195 ft., which the city proposes building at Sixth street and Lehigh avenue for high pressure fire service.

The E. H. Mumford Company reports a moderate betterment in the demand for foundry molding machines. Sales of jolt ramming machines particularly have recently been made, as have also several of the ordinary type. One 10-in. jolt ramming machine has just been shipped to the Cambria Steel Company, Johnstown, Pa., and an order has been booked for a 16-in. machine of the same type for Wisconsin parties. A new mold table of the vertical type, which is now being made by the Mumford Company, and for which patents are pending, is also attracting considerable attention in the trade. This company is now equipping a complete molding machine demonstration plant, which is rapidly approaching completion, at its office and salesrooms, 1223-1225 Spring street, in this city.

The J. G. Brill Company has acquired the plant of the Danville Car Company, Danville, Ill., and will operate it under its present name. The Danville plant was completed about one year ago, and occupies a tract of 217 acres. The buildings provide for 10 distinct departments. The erecting shop is 150 x 350 ft.; the freight car shop, 90 x 320 ft.; woodworking department, 60 x 120 ft.; truck and machine shops, 120 x 120 ft., and the office building, 30 x 120 ft. The company will build street cars of every description, as well as steam railroad coaches, freight cars, trucks and electric locomotives.

The Picatinny Arsenal, Dover, N. J., will receive proposals until May 25 for supplies to be furnished during the year ending June 30, 1909. These include steel, iron, hardware and general equipment. Information regarding the requirements may be had from the commanding officer at the above address.

Bids are being taken by the Market Street Elevated Railway Company of this city for three stations to be erected on the route along Delaware avenue. One of these will measure 27 ft. by 59 ft. 10 in., another 27 ft. by 73 ft. 9 in. and the third 14 ft. 1 in. by 54 ft. 2 in. Platforms extending over 500 ft. are also to be built, while stairs and ferry approaches are included in the plans. A signal tower is also to be erected at one point on the line.

The Standard Pressed Steel Company notes an increase in the volume of business and is now running its plant on full time. The export demand for pressed steel hangers has been particularly good, orders for 300 hangers having been received from Holland, 250 from Switzerland, 250 from Barcelona, Spain, and several hundred each from France and Germany. Large sales of pillow blocks and other specialties have also been made in European countries. The domestic trade does not show as much activity as the foreign. Orders are numerous, but the quantities taken are small, there being no disposition on the part of the trade to order beyond what is needed for immediate use. Business in the Eastern States, however, is reported better than that from the West.

New England Machinery Market.

WORCESTER, MASS., May 5, 1908.

April showed a slight improvement over March in business transacted by the machinery dealers, taking New England as a whole. The totals of March were greater than those of February, and February was better than January. Yet April was by no means a good month, judged by recent standards. The degree of betterment was more pronounced in the machinists' supply trade, though this branch of the business is not very active. The acceleration is considered to be due to the season rather than to a change in business conditions. Trade is apt to reach a climax in the spring, especially in mill and mechanics' supplies, and under depressed as well as normal times April and May are usually good months in comparison with their predecessors, and with the summer following. The dealers continue to receive orders, and the anticipation is that the month will show a gain. With the machinery manufacturers, business does not appear to improve. There are exceptions to the rule of radical reductions from normal production. Among them are the Bath Grinder Company, Fitchburg, Mass., and Fay & Scott, Dexter, Maine, both of which concerns are running full, the former on its standard line of grinders, and the latter, it is understood, on special machinery, as well as on its regular products. As a whole, production is decreasing among the machine tool builders. Complete shutdown is not a common experience, but reduced working forces and short hours continue to be the usual necessity.

The dealers state that buyers are showing signs of greater courage. A few orders have been booked from the larger concerns included in the list of those who have been making promising but hitherto unproductive inquiries during the past month or two. Some encouragement has resulted from the demonstrated success of some railroads in securing loans and in placing bond issues, because a material part of the money will go directly or indirectly to the machinery trade. But confidence in the immediate future does not exist. It is of a broader sort, dealing with the future that will follow the turn of the tide from the present dullness, whenever that will be, the general belief being that it will come with the close of the Presidential campaign. There are those who expect a sharp, sudden, radical change. Others look for a gradual improvement, accelerating as it goes on. Everyone agrees in the opinion that the next upward wave of the curve of business will be the highest yet.

The list of machine tools which will be required by the Lowell Textile School, Lowell, Mass., will include two 14 in. by 6 ft. engine lathes, an 18 in. by 10 ft. engine lathe, two 11 in. by 5 ft. speed lathes, a 24 x 24 in. by 6 ft. planer, universal milling machine, sensitive drill, upright drill, wet grinder, dry grinder, power hack saw and minor tools. The school is to establish a machine shop, instruction in which will be included in the curriculum. The funds for the purpose are included in an appropriation now pending in the Massachusetts Legislature.

Benjamin J. Davis, 35 Westminster street, Worcester, Mass., is planning to establish a steam boiler business in that city. The purpose is to equip a boiler shop of moderate size, for which an entire equipment will be required, including punch, shears, rolls, flange punch, upright drills, &c. No location has been decided upon; in fact, the plans have not yet passed the tentative stage. Mr. Davis desires catalogues of machinery suitable for boiler building. He was until recently superintendent of the works of the Wm. Allen & Sons Company, Worcester, boiler manufacturer, with whom he had been connected for many years.

The Chandler & Farquhar Company, Boston, Mass., is selling out the entire stock of new and second-hand machinery that was damaged by water during the progress of a fire in the upper part of the building in which was located the company's warehouse. The list of new tools includes 17 engine lathes, a turret lathe, 24 sensitive drills, 19 upright drills, 13 milling machines, 6 screw machines, 3 shapers, 5 gear cutters, 13 grinding machines and a variety of other machinery. The second-hand list is a comprehensive one.

It is stated that the Danielsonville Thread Company, Danielson, Conn., is to build a large dam at Pomfret Landing, Conn., for the purpose of developing water power to operate an electric plant which will furnish power for a new

mill which will be built in the near future, as well as for the existing plant.

The J. W. Lathrop Company, Mystic, Conn., manufacturer of gasoline engines, is making inquiries for new machinery for its shops.

The Mechanical Toy Movement Company, 35-37 Randall avenue, Bridgeport, Conn., has incorporated under Connecticut laws with an authorized capital stock of \$50,000. It will manufacture mechanical movements, such as moving picture machines for home use, and medium grade talking machines, and the secretary, Albert M. Vack, states that the company will probably be in the market for new machinery in the near future. The other incorporators are John F. Kopp and George S. Flather.

It is stated in local railroad circles at Danbury, Conn., that the New York, New Haven & Hartford Railroad will soon begin the erection of a new machine shop and roundhouse in that place.

The recent report of the receivers of the Pope Mfg. Company, Hartford, indicates that the condition of business with the company is satisfactory. Similar favorable reports come from other large manufacturers of automobiles and their accessories, the demand upon them being greater than was anticipated, although not equaling the unparalleled record of last season and the year before.

The Crompton & Knowles Loom Works, Worcester, Mass., will not require so much new machinery in connection with its large new buildings, referred to in this column last week, as has been anticipated. The foundry equipment will be new throughout, and will include all modern improvements in the manufacture and cleaning of castings, but as the work is chiefly light, there will be no need for an extensive crane system. As to the machine shop and general manufacturing buildings their equipment will include the tools in the plant of the Crompton & Thayer Loom Works, the business of which company was recently acquired. The new buildings mark the beginning of a policy of concentration, it is understood. Some new tools will doubtless be needed, though at the present time no idea can be obtained of what the list will include. The new buildings, which will cost about \$155,000 under the contract already awarded, will consist of a factory and office building, 60 by 246 ft., and with extended front at one end; machine shop, 54 by 184 ft., and four stories, and a foundry 225 by 225 ft. A large amount of steel is called for in the building specifications. An overhead trolley hoist will be installed for loading and unloading between the machine shop and the railroad. The company operates plants at Providence and Philadelphia, as well as the works to which the additions are to be made, formerly known as the Knowles Loom Works; the plant formerly operated as the Crompton Loom Works, and the Crompton & Thayer plant, all of Worcester.

The Skinner Chuck Company, New Britain, Conn., is sending out its new 1908 price-list, which illustrates and describes the company's line of lathe drill and planer chucks. The new list shows its 1908 pattern independent lathe chuck, also its geared pattern new model drill chuck, both of which were recently put on the market.

St. Louis Machinery Market.

ST. LOUIS, Mo., May 5, 1908.

The general business situation shows little change, but sentiment is improving. In some lines the cold and rainy weather which has prevailed in excess of the normal for the month has had an unfavorable influence. With manufacturers and dealers in electrical machinery and supplies come very favorable reports of satisfactory demand for their specialties. The demand for heavy machinery continues dull, and but little business is being received from the railroads, particularly the large companies. They admit they need material and supplies, but claim the falling off in revenue prevents their coming into the market.

The Curtis & Co. Mfg. Company reports a fair number of orders for steel castings, and is about to ship a carload of gypsum kettle bottoms. For pneumatic tools there is at present little inquiry, while only a limited demand is found for traveling cranes, air compressors, saws and sawmill machinery. The plant is running on half time.

The J. A. Fay & Eagan Company, Bank of Commerce Building, reports it is in receipt of a considerable number of inquiries for woodworking machinery, but only a limited number result in orders. Its factory at Cincinnati is working with two-thirds of the usual force.

The Rumsey Mfg. Company states that while most lines of machinery manufactured or handled by it are dull, there has been considerable call for gasoline engines, principally for use in small portable sawmills, which lumber mills have found to be desirable and economical.

The Wesco Supply Company reports quite a revival in its trade. It had earlier in the year in case there was no improvement contemplated cutting down its force in both the factory and the office April 1, but this was not done. The company has lately sold an equipment for a 240-kw. alter-

nating current plant and two 50-kw. direct current plants. The demand for small apparatus has improved considerably, and is in fact better than was the case a year ago, especially from the Northwest and Southwest.

Government Purchases.

WASHINGTON, D. C., May 5, 1908.

The Isthmian Canal Commission will receive bids until May 25, Circular No. 440, for hoisting engines, car tenoning machine, automatic car gaining machine and other supplies.

Proposals will be received until May 12 at the West Point Military Academy, West Point, N. Y., for coal conveying apparatus.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until May 19 for a grinding machine, drill and hydraulic pump.

The Isthmian Canal Commission will soon ask bids for one 10,000-lb. interchangeable crane and buggy geared ladle, one large pneumatic sand shaker, one 750-gal. duplex water pump, one 1250-gal. multistage horizontal turbine pump, one power hammer, etc.

Circular No. 438 of the Isthmian Canal Commission, asking bids until May 18 for a quantity of supplies, covers class 1, three locomotive coaling cranes; class 2, one steam hammer; class 3, one radial drill; class 4, one planer; class 5, one engine lathe; class 6, one engine lathe; class 7, one double punch and shears; class 8, one universal crank shaper; class 9, one sliding head drill press; class 10, one pipe cutting and threading machine; class 11, one single head bolt cutter; class 12, one cold saw; class 13, one drill grinder; class 14, one valve reseating machine; class 15, one duplex emery grinder; class 17, two portable cylinder boring machines; class 18, one portable hydraulic crank pin and small wheel press; class 19, one set of test pumps; class 20, one portable boiler testing pump; class 21, two boiler feed pumps; class 22, 30 sand pumps; class 26, one band saw and one circular saw.

The Isthmian Canal Commission will shortly ask bids for boiler equipment for two power plants on the Isthmus, each to consist of six 400-hp. water tube boilers, one feed water heater, two boiler feed pumps, two induction draft fans, one fan motor, one fan turbine, one air compressor and other accessories.

The following bids were opened April 28 for machinery for the navy yards:

Class 107.—One vertical milling machine—Bidder 23, Becker-Brainard Milling Machine Company, Hyde Park, Mass., \$1625; 45, De Zouche, Hanson & Co., Philadelphia, Pa., \$1800; 154, L. W. Swind, Philadelphia, Pa., \$1625.

Class 111.—One 10-in. centrifugal pump—Bidder 1, Alberger Pump Company, New York, \$1064; 20, Buffalo Forge Company, Buffalo, N. Y., \$1650; 21, Blackall & Baldwin Company, New York, \$1265; 32, Camden Iron Works, Camden, N. J., \$1095; 50, D'Oller Engineering Company, Philadelphia, Pa., \$1340, \$1430 and \$1406; 111, National Electrical Company, Washington, D. C., \$1600; 139, H. A. Rogers Company, New York, \$1320; 176, Henry R. Worthington, New York, \$1425; 184, Central Metal & Supply Company, Baltimore, Md., \$1080; 186, Lake City Engineering Company, Erie, Pa., \$957.

Class 112.—One motor driven turbine pump—Bidder 1, Alberger Pump Company, New York, \$1490; 20, Buffalo Forge Company, Buffalo, N. Y., \$2250; 32, Camden Iron Works, Camden, N. J., \$2045; 50, D'Oller Engineering Company, Philadelphia, Pa., \$1820, \$2190 and \$1850; 139, H. A. Rogers Company, New York, \$1690; 176, Henry R. Worthington, New York, \$2135.

The following bids were opened April 25 by the chief signal officer of the army for telephone motor generators:

Item 1.—One telephone motor generator—National Electrical Supply Company, Washington, D. C., \$350; Holtz-Cabot Electric Company, Brookline, Mass., \$221.54; Crocker-Wheeler Company, Ampere, N. J., \$140; Dean Electric Company, Elyria, Ohio, \$312.87; Roth Brothers, Chicago, Ill., \$352.

Item 2.—One telephone motor generator—National Electrical Supply Company, Washington, D. C., \$440; Holtz-Cabot Electric Company, Brookline, Mass., \$276.48; Crocker-Wheeler Company, Ampere, N. J., \$175; Dean Electric Company, Elyria, Ohio, \$383.22; Roth Brothers, Chicago, Ill., \$440.

Under bids opened January 28 for machinery for the navy yards, the Niles-Bement-Pond Company, New York, has been awarded class 4, one boring and drilling machine, \$3900.

The following awards have been made for supplies for the Isthmian Canal Commission, bids for which were opened March 14, Circular No. 430:

Ball Engine Company, Philadelphia, Pa., class 1, one cross compound four-valve Corliss noncondensing engine, \$10,500.

General Electric Company, Schenectady, N. Y., class 2, one 400-kw. generator, \$4845; class 3, one engine driven excenter, \$1245.

Under bids opened March 31 for machinery for the navy yards, the Tindel-Morris Company, Eddystone, Pa., has been awarded class 62, one combination grinding machine, \$2250.

General Electric Company, Schenectady, N. Y., class 141, four ammunition hoist motors, \$2400.

The Warren Steam Pump Company, New York, has been awarded class 1, six vertical steam pumps, \$4800, under opening of April 14 for supplies for the navy yards.

Under bids opened April 21 for machinery for the navy yards, the Cleveland Crane & Car Company, Wickliffe, Ohio, has been awarded class 111, one 3-ton hand traveling crane, \$450.

Under opening of April 20, circular No. 434, for supplies for the Isthmian Canal Commission, the Ball Engine Company, Philadelphia, Pa., has been awarded class 1, one tandem compound engine, \$4325.

HARDWARE

MANUFACTURERS, not only in Hardware, but in other branches, are confronted by conditions which bring up many questions in regard to the policy to be pursued in the making of prices. When there is a very heavy volume of current business and practically all are able without difficulty to dispose of their product there are comparatively few perplexities in regard to prices. It is true that with a steady market and the absence of any general reason for reductions the question as to the advisability of making advances must be canvassed, but action in this direction must be taken cautiously, because in the experience of the trade advances, while in themselves attractive, are attended by certain perils. While there is the immediate advantage of increased profit—unless the jobbers are let in too liberally at the low prices—there is, on the other hand, the encouragement of competition and the establishment of a level of prices from which sooner or later there must be a descent. When, however, the tide of prosperity begins to ebb and business is slow, when factories are only partially employed and the indications point to lower prices in general, the manufacturer must do a good deal of thinking. He must determine upon his policy in view of the new conditions. The problem calls for a balanced judgment in reaching a decision. Similar conditions, however, have often been encountered in the past, and perplexities of this character are indeed inseparable from business.

It certainly contributes to his peace of mind as well as to the healthfulness of the market if a manufacturer can be content with his share of the business going, and is able without distress or heartburning to see his competitor taking orders which he would like to have. There must be a cheerful recognition of other makers and their right to as much business as they secure by legitimate competition. Efforts to drive competitors from the field are usually bad policy. The tendency of up to date business is to secure success along other lines.

In the strife for business there are frequent times when in self defense or as a measure of strengthening one's position in the market it is good policy and in a trade sense necessary to make a deep cut in prices. There is, however, a probability bordering upon certainty, that when the merchant or manufacturer acts under the stress of personal animosity for the purpose of injuring his competitor he does something foolish. Our readers will recall many instances in which bad blood is to be credited with much unbusinesslike competition and many an unwise cutting and slashing of prices.

Fortunately or unfortunately, some of the fundamental questions in regard to prices are often settled by the general condition and tendency of the market, to the pressure of which the manufacturer is obliged to a large extent to yield. When prices generally are advancing and his own costs increasing he must exercise a rare and commendable self-restraint in resisting the tendency to announce higher prices, but the pressure is often practically irresistible, and he must move in the same direction. On the other hand, when the trend is downward he may be able for a while to hold his ground and refuse to revise his quotations, but it is a fight against the laws of

trade which sooner or later will have their way. The question then is how soon and by what steps the descent is to be made.

Condition of Trade.

In this issue our readers will find material of exceptional scope and value for forming an estimate of the feeling in the trade in regard to the business situation. The review of the Iron and Metal trades given on a preceding page furnishes a compact summary of the conditions which prevail in the raw material market, which at this time is being watched with so much interest and solicitude. The jobbers are represented in letters from our regular correspondents in the principal centers, from which an admirable report of the situation is given as it is seen by these merchants of recognized ability and position. There are also extracts from many letters from Hardware manufacturers of various lines whose contact with the market for raw material on the one hand and with the distributors, wholesale and retail, on the other, gives them exceptional opportunities for gauging the temper and tendency of the trade. The general effect of these advices will be reassuring as justifying confidence in the essential soundness of the business situation, indicating as they unquestionably do a better financial and commercial condition than prevailed even a month or two ago, with a prospect of a gradual return of normal business. The question as to the extent to which prices will be maintained is much canvassed in the trade, but the volume of current business is certainly limited by the feeling that sooner or later lower prices may develop. Changes in price in Hardware and its allied fields are as a rule being made conservatively. Two most important features in the situation are the undoubted improvement in financial matters and the promising outlook for the crops.

Chicago.

Sensitively responsive to influences tending to check consumptive buying, trade, both wholesale and retail, has been sensibly retarded by the unseasonably cold and backward weather of the past week, with the result that the opening days of May have not marked the expected upward turn in the declining volume of business. But, while there is nothing in the general outlook of the immediate future on which to base confident hope of rapid acceleration, conditions seem to favor improvement rather than further retrogression. There will, in all probability, be no change in the prevailing policy of hand to mouth buying now pursued in all branches of the trade this side of July, at least, but that orders of this character should develop in greater numbers is a fair presumption. Statements to the effect that the heavier lines, such as Nails, Barb Wire, Black and Galvanized Sheets, and the like, in the hands of jobbers and retail dealers have not moved according to expectations, thereby creating overstocks, are met by firm denial by those directly in touch with the situation. The frequent reorders now being received by mills and jobbers for Nails and Fence Wire, accompanied by urgent requests for prompt shipment, is pointed to as evidence that distributors have generally underestimated rather than overanticipated their requirements. Considering the extreme degree of conservatism inspired by the untoward developments of the past six months, it is quite unlikely that many merchants have been betrayed by over sanguine hopes into making unwarranted stock purchase commitments. It has been the common aim of all dealers, large and small, to reduce stocks to the lowest point consistent with current trade requirements.

and the pursuance of this object could only result in diminishing warehouse stores. The beginning of a fair demand for Garden Hose has been temporarily checked by the recent cold rains, but the movement of Lawn Mowers on the other hand has been favorably affected by the same conditions. Whether or not there is positive permanent improvement in Builders' Hardware is difficult to determine because of the intermittent and somewhat erratic character of demand. Orders will come in quite briskly for a time, inspiring hopes of lasting betterment, only to drop off again in a few days to almost nothing. Still everything seems to favor more active business in this line, as building projects now taking form get actively under way. Heavy Hardware reflects the quietness prevailing in manufacturing industries using Bars, Sheets, Wood Stock, &c. The demand for Steel and Iron Bars is limited to small orders required for immediate use. As respects prices no radical changes are observed in any line, though in some directions a tendency toward further weakness is noted.

St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—Buying continues on a conservative basis. Orders are numerous, but quantities are moderate. This makes the handling of business more laborious and expensive than when it was the rule to buy full cases and boxes.

As we suggested in our last article, it seems that Axes are about to be advanced. Several manufacturers have announced an advance of 50 cents per dozen. No doubt the jobbing trade would welcome some agreement among the Axe makers that would give steadiness to this important line.

It is announced in the press that there will be a general meeting of the United States Steel Corporation May 21. It is hardly to be expected that prices will be advanced, and it is well known that a very influential party are in favor of a considerable decline in their products, not only on Wire and Nails, but on all their lines. It is, therefore, wise to buy these goods only for pressing needs until the decisions of this meeting are announced.

The Padlock manufacturers have got together and advanced prices. All the leading makers are interested.

In Builders' Hardware the association makers must be feeling the inroads of the outsiders. Comparisons lead to the belief there has been a very snug profit for some years past for the manufacturers on this line. It is not the feeling of jobbers that the Builders' Hardware makers have been overgenerous to the jobbing trade when they had things all their own way. Not only have differentials been very small, but the Builders' Hardware manufacturer has set no lines upon the classes of trade he sold. Jobber, retailer or consumer, all seemed to look alike to him.

The leading interests in Shells and Metallic Ammunition do not now receive their mail in the same office. Outside makers are steadily growing. There will soon have to be some adjustments here. No doubt the same wisdom that has conspicuously guided the affairs in this line is still at the helm.

So might one go from item to item and line to line. It is all an interesting study. It seems to us that in a number of lines recessions are a necessity under existing conditions, and all we can ask is that the retreat—if we may call it such—be conducted in an orderly manner.

Early in the season we did not hesitate to oppose reductions, believing the trade needed time to recover from financial troubles. The manufacturers have helped the situation by rare self-control. The trade as a whole now have had time to recover their strength, and we believe any adjustments manufacturers consider necessary should be made now, so we can go into the fall trade believing prices are in a large measure fixed.

Baltimore.

CARLIN & FULTON.—The spring season is now well advanced, and while purchases by the retail trade from the beginning of the year have not been in large quantities at any one time, orders have been frequent and the volume

of business aggregates considerable, though, of course, not equal, as a general thing, to the sales of last year. This can be accounted for by the lack of speculative value to goods, the fear of possibly some reduction in prices and the fact that money still circulates slowly in many sections, making collections difficult; the shutting down of cotton mills in some sections and the lack of activity in the lumber and mining regions, resulting in a decreased demand for labor, and consequently in a lessened demand for goods as the purchasing power is smaller.

On the other hand, the agricultural sections have done well. Cotton has undoubtedly depreciated in value, and the planters have been greatly criticised for attempting to hold their crops for 15 cents per pound as an ideal figure. This, of course, was unobtainable, as it has resulted; but had the entire crop been marketed early in the season without regard to market conditions the reduction in price would have occurred almost immediately, and while the price of 15 cents was never reached, yet the crop has been worked off gradually until the present figures apply to probably a small percentage of the full crop. From what we hear the acreage this year will be increased over that of 1907, and the growing crop has had no setback as last year, when weather conditions compelled a replanting several times, which made last year's crop a costly one to raise. The grain sections have had both satisfactory crops and prices, and cattle has also done well; so upon the whole the average farmer is in as good a condition financially as, if not better than, he has ever been.

According to the financial columns of the daily press bank reserves are increasing every day, and in New York City the surplus is greater, with one exception, than has ever been known before. Nevertheless, throughout the rural sections complaint is made that the banks are still holding their money, and until it is circulated more abundantly both collections and business are apt to drag.

The stock market has shown wonderful recoveries in values, in spite of the decreased earnings reported by the great railroad and manufacturing corporations of the country. This seems anomalous, for dividends depend upon earnings, and the great financiers of the country must anticipate a great resumption of business following a depression which they can consider but temporary, and which will continue probably no longer than the uncertainty as to the next Presidential election.

The prices of manufactured goods have been wonderfully well sustained, and while there have been in some few goods slight concessions, a decline is the exception and shows great wisdom on the part of the manufacturing interests. The curtailed production with no accumulation of old stocks has kept the market from being glutted, and the daily consumption of goods, though seemingly small, is still sufficient to absorb generally the present output of the factories.

New Orleans.

WOODWARD, WIGHT & CO., LTD.—The last few weeks have not shown any change in conditions or any increased activity in our different lines. The crop reports continue good. An abundance of rain in the past few weeks has benefited cotton in Texas, which has been in need for some time, and also the sugar country. All indications point to large crops in these lines.

The demand for lumber is still very slack. Several additional mills have closed down. This need not be wondered at, as it is very evident from reports, such as the last quarterly report of the United States Steel Corporation, that the industrial output of the whole country has run down less than one-half. The net earnings of the Steel Corporation shrinking from \$33,900,000 in the first quarter of 1907 to \$16,100,000 in the past quarter, as well as the increased number of idle cars over the record report of February 5, 1908, show that the largest and usually most active industries are sorely feeling the effects of present conditions. Both jobbers and retail dealers in this vicinity are carrying small stocks and buying lightly.

A recent cyclone which passed over a small part of the lumber territory did a vast amount of damage in several towns and considerable damage to sawmills and timber property, but fortunately its track was a narrow one and

many of the most valuable timber tracts, even in the immediate vicinity of the cyclone, were untouched. The blowing down of quite a number of trees will necessitate some of the mills cutting up more lumber than would otherwise be the case, and may disturb lumber market prices somewhat in moving it off.

It is to be hoped that the improvement in financial conditions noted in the East will enable the railroads to enter the market with further flotations of bonds and stocks, giving them the necessary capital to make needed repairs and improvements, as business from the railroads and car building trade to the lumber industry in particular is sorely needed, and if it should come around to anything like its former proportions will put a different aspect on the lumber situation.

Collections continue very fair and, under present conditions, are all that could be expected.

Portland, Oregon.

FAILING, HAINES & MCCALMAN.—The writer continues optimistic regarding the conditions on the North Pacific Coast. Within the last two or three weeks he has seen a number of the other dealers from the immediate vicinity of Portland and from other points tributary both to Portland and Puget Sound, and they all report that conditions are improving, that money is easier and that all prospects point to a prosperous year provided nothing untoward happens.

The crops, from the bulletin issued by the railroads in this territory, promise exceedingly well. However, it is, of course, rather early to depend very strongly upon them. Should we, however, have merely a fair crop at a fair price there is no reason why this country should not be as prosperous as last year, if not more so. Of course we are to some slight extent affected by the financial depression, which we are told still prevails east of the Rocky Mountains, but, to tell the truth, if we did not have the newspapers to tell us about it we would never know it.

St. Paul.

FARWELL, OZMUN, KIRK & Co.—The April trade has generally been satisfactory. Of course it might have been still larger, but it was quite an improvement over March and has shown conclusively that the conditions here are steadily growing better; and, indeed, we would say, with the conditions here as they now exist, that if they were equally favorable throughout the country the effects of the financial disturbance of the last few months had largely passed by.

Of course speculation is not "in the air," but this is not bad for regular business. Customers are buying only for what they consider actual wants. This is not bad either, so long as actual wants are not excessively small. Future prices may also give some concern, but prices are holding fairly well. Rates of interest are now on a fair footing for both borrowers and lenders.

The chief point of interest in the Northwest for the next three or four months will be the growing crops. Thus far the condition is satisfactory. Most of the small grain has been sown and it starts out in fine condition, but the hard pull is ahead and the outcome of the crops no one knows. Our reliance is in the general average of the years. For the last quarter of a century the writer has been a deeply interested observer yearly of the crops in the Northwest, and in these 25 yr. there has been none in which the crops were generally so poor as to make it a wholly unprofitable year for commercial business. In some years profits were small, but there was something left on the right side unless some outside trouble, such as the panic of '93, interfered.

This very fortunate experience may not always last, but we take courage from it and keep it screwed up to the point necessary to hold our place in the "firing line," and we shall trust that 1908 will not reverse this order of things. We also firmly believe that conditions throughout the whole country generally are improving and promise to continue to grow better.

Confidence is certainly being restored. Business houses have been adjusting themselves to the new conditions. Stocks of merchandise are generally not large, and in but

few cases excessive, and the tremendous consumptive requirements of the country will do the rest. It is not at all probable that the issues at stake in the Presidential election this year will seriously disturb business.

Cleveland.

THE W. BINGHAM COMPANY.—How to keep the dinner pail full is the all absorbing topic of the present day. Let us resolve to do all we can to keep our factories busy, capital invested and railroads running, and send the muck racker to the rear and drop the demagogue, and do all we can to inspire confidence, permit no arbitrary ruling by any Government department to handicap any legitimate business enterprise and the full dinner pail will have another chance.

In the country in the farming district trade in general Hardware is good; merchants buy light but often, and in the aggregate the country trade is about normal.

There is some readjustment of prices, but no very radical changes are taking place and confidence is gradually being restored. Our banks have plenty of money for legitimate trade that can be had by the old line of responsible houses simply for the asking.

Spring goods, such as Lawn Mowers, Rubber Lawn Hose, Refrigerators, Ice Cream Freezers, Galvanized Tubs and Pails, Shovels and Spades, Picks and Mattocks, mechanics' tools of all kinds and small Hardware are going forward in good volume. Considering the times and trials business men have had to contend with the general Hardware trade is very good. Transportation companies are giving good service.

Early spring has come with abundant rains to swell the seeds and crops are well on the way growing splendidly, and there is a fair prospect of a heavy harvest. It is a well-known fact when the farmer is prosperous the world makes money. So let us cheer up, for the best is yet to come.

Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—We had hoped by this time to turn in a more cheerful report of market conditions, but this specific hope must be deferred since it cannot be truthfully pronounced realized. It is more or less like those troublesome notes that the trade had falling due last autumn—they simply had to be renewed, no matter what the rate of interest was at the time—and so we now renew our hope and hopeful expressions.

Present conditions are interesting enough in their economic features, and tempting to speculate upon as offering entirely new possibilities. We had word of a prosperity convention in Baltimore some months ago, when it was resolved that nothing was the matter except that people were not whooping things up enough. Whether anybody did any extra whooping by reason of these resolutions is doubtful. If they did, the echo was too faint to be heard far. Now comes the press report from St. Louis announcing the fact that another prosperity meeting has been in session there for several days, and that it had been decided by several gentlemen in that great business center that prices and wages are not to change, and that people are making a mistake in not buying liberally, not to say extravagantly, and in not conducting business of to-day as though we were selling twice as much and as though the Steel Corporation had 8,000,000 tons ahead unfilled orders on its books instead of 3,000,000. And then there are more resolutions and more efforts to tack the pendulum up at the optimistic limit of its swing. Here is where the scientific interest comes in. Is the new tack, peg or other device strong enough to overcome the more natural tendency for the said pendulum to swing back its own old fashioned way? We do not believe that either lasting sentiment or business can be manufactured in this way. It comes when it gets good and ready, and not before; it comes when the great multitude of buyers are supplied with cash or credit, which they are tempted to use by the suggestion of new wants. Readjustments have to be made before then, and a man has to be permitted to call himself a fool a few hundred times before he is willing to take the back track and begin over again.

The report of numbers of failures and of the operations of the Clearing Houses over the country would go to in-

dicate that business is certainly contracted. As for the money situation, it is such as to induce expansion were such expansion justified by insistent demand. Commercial paper has all at once come into great favor. Those who loaned money on it last year were entirely satisfied with the outcome, for they suffered no shrinkage, but at maturity received their own with usury. Hence, now the brokers' letters are not an inconsiderable part of the morning's mail, and we are willing to believe in all cases that now, in the present juncture, their facilities are unsurpassed. We are out of the woods and whistling at a great rate both of us.

Among the meteorological performances that attracted attention was the tremendous storm which swept through Louisiana, Mississippi, Alabama and even Georgia. There was quite a loss of life and much damage done. Locally we were treated to a heavy wet snow on April 30, when our trees are in full leaf and many plants in bloom. Nature goes about its pruning ruthlessly and is satisfied by no half-way measure. Tender vegetables and fruits suffered badly. However, there will no doubt be enough to go around.

Omaha.

LEE-GLASS-ANDRESEN HARDWARE COMPANY.—The month of April closes with trade conditions in the trans-Missouri region in a very favorable position. The volume of business shows up satisfactorily. A season of continuous rough and cool weather has retarded farm work, particularly planting. With the advent of warm and genial weather a different aspect would surround the situation.

There is nothing in the general business situation at the present time, nor any developments in sight, calculated to disturb the satisfactory volume of business that is now going on.

It is expected that the present status of the situation will remain about where it is during the next few months; after that everything will depend on the extent and value of the crops.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—Business continues to show an increasing demand for seasonable goods, due to the almost ideal weather conditions that have prevailed for the past two weeks in this immediate territory.

One marked and distinctive characteristic of this year's business over that of several seasons past is the increase in the number of orders and decrease in the quantity of almost every item specified. It is safe to say that the speculative feature has been wiped out, and while merchants are fairly busy, they still have time to look more carefully into the details of their business and to introduce economies that were never thought of before.

This thought was suggested by a letter the writer received this morning from the president of one of our State Hardware associations, urging the influence and co-operation of our firm and local association to secure for merchants, and the letter writing public generally, a reduction in the first class postal rate to 1 cent per ounce. This matter, when viewed in the light of the greatest good to the greatest number, appears so obviously just and fair that it would seem almost an insult to the intelligence of our legislators to suppose that we (who pay almost 90 per cent. of the total revenue of the Postal Department) should be required to petition for it, or that it is conceivable that before granting it the service would be further loaded with work which would greatly increase the deficit.

It is sometimes said that there is great advantage in numbers, but this is an instance where the exception proves the rule. It cannot be possible that there are not more people directly affected by first-class postal rates than by all others put together. Yet the interests of the farmer are tenderly nursed by the free rural delivery, and attempts are constantly made to increase this service by the further burden of the parcel post. The newspaper and publishers' interests are furthered by a 1 cent per pound rate for transportation of their merchandise, while other manufacturers and merchants pay 16 cents per pound for merchandise and about \$1 per pound for letter postage.

We find by actual test that our letter mail runs about 55 letters to the pound.

It is further proposed to help out the aforesaid needy manufacturers by reducing or abolishing the tariff on part of their raw material; but we hear of no effective work being done for the long suffering public, who for years have been held up by this disproportionate first-class rate, which unduly taxes the social and business correspondence of every one of us, from the fond announcement of the stork's latest arrival to the sad message of condolence at the other end of the trip.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—Trade conditions seem to be more normal at this writing than they have been since last fall. The best part of the jobbing trade for spring is over. May and June are always quiet months in the jobbing Hardware business in this section. Trade does not seem to be much more quiet than usual at this season of the year. One feature of the situation, which is very encouraging, is that collections are fully as good as at this season in former years. The opinion seems to prevail among business men of all classes that when another good crop is assured there will be a great awakening in business.

Up to this time crop prospects are most excellent. The prospects for a wheat crop are particularly good. The prospects are good for an early vegetable crop, which is the first one that produces money. A much larger acreage of cantaloupes and tomatoes have been planted in this State than in any previous year. The raising of fine poultry, for which our climate seems well adapted, has become a great industry and is a great money producer.

It is the general opinion of merchants and manufacturers, and the people generally, that our country is in better condition than it ever was before, and as great efforts are being made to produce another good crop we have strong hopes for the future prospects of the Southland.

NOTES ON PRICES.

Wire Nails.—The business being received by the mills is of about the same volume as during the last few weeks. Orders are largely confined to small lots for immediate shipment, indicating that stocks are generally low. The possibility that prices may be lower no doubt exerts some influence upon the trade, causing them to place orders covering near-by needs only. Quotations for base sizes continue as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers.....	\$2.05
Carload lots to retail merchants.....	2.10

New York.—The slight improvement in local demand, to which reference was made last week, still results in a moderate business. The demand is irregular, being better some days than on others. Regular quotations are on the basis of \$2.40 per keg for small lots at store.

Chicago.—Shipments for April by the principal interest were slightly less than for March. While a moderate amount of new business is coming in it is comprised mainly of small orders for quick shipment. The number of reorders that are included in the general volume of business indicates that stocks are pretty generally well reduced, and the uncertainty that exists as to the future maintenance of present price levels will effectually prevent accumulations until it is evident that the trend of values is upward rather than the reverse. Present prices are reported to be pretty regularly held, save for slight concessions by some of the smaller interests. Quotations are as follows: \$2.23 in car lots to jobbers, and \$2.28 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—As noted in this report last week, the orders for Wire Nails, which are being entered by the mills, show some increase, due to the heavier demand for Nails made upon jobbers by consumers. The mills are able to fill orders promptly, and have a fair tonnage ahead on their books. Reports are that the American

Steel & Wire Company is operating its plants to about 75 per cent. of aggregate capacity. Demand is mostly for small lots, and quick shipment is usually wanted, showing that stocks held by jobbers are very light. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers..... \$2.05
Carload lots to retail merchants..... 2.10

Cut Nails.—A limited number of small orders only is being received at the mills, none of which are operating full time. Some mills are entirely closed down. The market is irregular, and concessions of 15 cents or more are being made on regular Steel Nail quotations, which are as follows: \$2.05 base, per keg for carload lots at mill. Iron Nails generally should command about 10 cents more than Steel.

New York.—Demand for Cut Nails continues extremely light in the local market. Regular quotations are on the basis of \$2.30 per keg, for small lots at store.

Chicago.—Transactions as far as jobbers are concerned are restricted to occasional orders of small lots from miscellaneous sources. The principal users, such as the car shops, are practically out of the market, and the requirements of the building trades are largely restricted to Iron Shingle Nails. Regular prices are not being closely observed either by mills or jobbers. Chicago quotations are nominally as follows: Iron Cut Nails, carloads, to jobbers, \$2.23; to retailers, \$2.28; Steel, to jobbers, in carloads, \$2.03; to retailers, \$2.08.

Pittsburgh.—Only a few small orders are being placed for Cut Nails, and the situation in this trade approaches very closely to complete stagnation. Some Cut Nail mills are closed down entirely, while others are running to partial capacity to take care of the small orders that are being placed. The market is irregular, and concessions of 15 cents or more are being made from the regular prices of Cut Nails. We quote Steel Cut Nails at \$1.90 to \$1.95, f.o.b. Pittsburgh, for carload lots, and about \$2 for small lots, to which freight to point of delivery is added. Iron Cut Nails are about \$2.05, at maker's mill.

Barb Wire.—There is little change in the volume of business being received by the mills, and orders are restricted to actual requirements as nearly as they can be gauged. The trade, not being disposed to accumulate heavy stocks, are placing orders for small lots. Prices are being maintained at regular quotations, according to information from the mills. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carload lots..... \$2.20
Retailers, carload lots..... 2.25
Retailers, less than carload lots..... 2.35
Painted. Gal.

Chicago.—The demand for Barb Wire is relatively stronger than for Nails, and in addition to the heavy shipments going forward from the mills, quite a fair volume of new business is coming out. Orders, though satisfactory in number, aggregate less tonnage than those offered earlier in the season, and, since the active fence building period is now well advanced, it is probable that within the next few weeks a considerable falling off in demand will be noted. Regular prices are reported to be firmly maintained. We quote as follows: Jobbers, Chicago, car lots, Painted, \$2.38; Galvanized, \$2.68; to retailers, car lots, Painted, \$2.43; Galvanized, \$2.73; retailers, less than car lots, Painted, \$2.55; Galvanized, \$2.85; Staples, bright, in car lots, \$2.35; Galvanized, \$2.65; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—Demand for Barb Wire is showing some improvement, and while orders are only for small lots for early needs, the aggregate of orders being placed is larger than for some time. Buyers continue to restrict purchases to actual needs, and are not disposed to carry any heavier stocks than are absolutely necessary to fill orders. Mills report that they are absolutely maintaining prices and that there is no cutting whatever. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots.....	\$2.20	\$2.50
Retailers, carload lots.....	2.25	2.55
Retailers, less than carload lots.....	2.35	2.65

Plain Wire.—New business continues to be received by the mills in a fairly large volume, but buyers are still confining orders to nearby requirements. Prices are reported as being maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

Nos.	6 to 9	10	11	12 & 12½	13	14	15	16
Annealed.....	\$1.90	1.95	2.00	2.05	2.15	2.25	2.35	2.45
Galvanized.....	\$2.20	2.25	2.30	2.35	2.45	2.55	2.95	3.05

Chicago.—The expectation that the conservative first buying by manufacturers would be followed by a liberal amount of reorders is being realized in a fair degree. At the same time there is no disposition to purchase ahead of actual requirements, the result being that frequent ordering of small lots is the rule. The ability of the mills to promptly furnish and ship material as wanted makes this method of buying both practicable and convenient. Regular prices continue to be firmly held by the mills. Quotations are as follows: In car lots, to jobbers, \$2.08, f.o.b. Chicago, and to retailers, \$2.15.

Pittsburgh.—New tonnage being placed is fairly heavy, but jobbers are restricting orders for small lots for actual needs. There is no prospect of an early advance in prices, and no incentive to carry large stocks, as the mills are able to make prompt shipments on all orders. We are advised that the mills are firmly maintaining prices. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carload lots.....	\$1.90
Retailers, carload lots.....	1.95

Brass.—There was a decline of $\frac{1}{4}$ cent per pound from the printed base prices of Brass in Sheets, Rods and Wire on May 4.

Binder Twine.—The market appears to be in a very satisfactory condition, as under favorable crop conditions buying has become more active than earlier in the season, when the amount of Twine ordered was not as great as usual. Some manufacturers are reported as having disposed of their entire output. In the Northwest seedling is said to be progressing under favorable conditions, and there is a prospect for a large acreage of spring wheat. Prices remain unchanged, as follows:

	Cents per pound.
Sisal	8½
Standard	8½
Standard Manila	9½
Manilla	11½
Pure Manila	13

Carload lots, $\frac{1}{4}$ cent less; 5-ton lots, $\frac{1}{2}$ cent less, central delivery, fall terms.

Twine and Mops.—Cotton Twine and Mops are lower, and the market in a general way is represented by the following quotations:

	Cents per pound.
Cotton Wrapping Twine, 5 balls to lb., according to quality	13½ to 19
Cotton Mops, 6, 9, 12 and 15 lb. to dozen	8½ to 19

Flax Twine has fallen off about 2 cents per pound from recent quotations, while American and Indian Hemp Twines are also correspondingly lower in price.

Bright Wire Goods.—An easier tone is felt in the market for Bright Wire Goods, which is particularly evidenced by lower quotations on Brass Cup and Shoulder Hooks. A discount of 85 and 10 per cent. is easily obtainable in these goods.

Axes.—Following the revision of prices announced by some manufacturers of Axes, as reported in these columns, the market may be said to show a somewhat improved tone. There has also been an appreciable increase in activity, as buyers who have received low quotations are disposed to get their specifications in promptly and thus avoid the risk of having to pay higher prices. While the advances made must of course be regarded as nominal, so far as the jobbing trade is concerned, they will doubt-

less tend to increase slightly the price of Axes to retail merchants.

Conductor Pipe and Eaves Trough.—Since our last issue, in which we referred to the new prices and territorial limits recommended to jobbers of Conductor Pipe, &c., the usual circular letter has been sent out, defining the districts into which the country has been divided and quoting the prices prevailing. As stated last week, the new feature of the schedule is the subdivision of the East into northeastern and eastern territory, the latter taking somewhat lower prices than the former on Galvanized Steel Pipe and Gutter. The complete schedule is as follows:

Article.	North-eastern territory. Per cent.	Eastern territory. Per cent.	Pittsburgh territory. Per cent.	Central territory. Per cent.	North-western territory. Per cent.	Western territory. Per cent.	Tennessee territory. Per cent.	Southern territory. Per cent.	South-western territory. Per cent.
Conductor Pipe:									
Galvanized Steel, standard sizes and gauges	70-10	75	75-10-5	75-10	75-7½	70-12½	70-10	70	70
Galvanized Steel, irregular sizes and gauges	70-10-5	75	75	75	75	70-10	75	70-10	70
Galvanized C. C. Iron, standard sizes and gauges	50-10-7½	50-10-7½	60	60	50-12½	50-12½	50-12½	50-5	
Galvanized C. C. Iron, irregular sizes and gauges	70.5	70.5	70.5	70.5	70.5	70	70.5	70	65-10
Eaves Trough:									
Galvanized Steel, standard sizes and gauges	75-10-5	80-2½	80-20	80-10-10-2½	80-10-10	80-10	80-5	80	75-10-2½
Galvanized Steel, irregular sizes and gauges	75	75	75	75	75	70-10	75	70-10	70
Galvanized C. C. Iron, standard sizes and gauges	60-20	60-20	65-10	65-10	65-10	60-10-5	60-10-5	60-10-5	60-5
Galvanized C. C. Iron, irregular sizes and gauges	70.5	70.5	70.5	70.5	70.5	70	70.5	70	65-10
Plain Ridge Roll and V. Ridge Cap:									
Galvanized Steel Crated	80-20	80-10-10-2½	80-10-10	80-10	80-5	80	75-10-2½		
Galvanized Steel wired in bundles	80-20-5	80-10-10-5	80-10-10-2½	80-10-2½	80-5-5	80-5	75-10-7½		
Galvanized C. C. Iron Crated	65-10	65-10	65-10	65-10	65-10	60-10-5	60-10-5	60-10-5	60-5
Formed Valley:									
Galvanized Steel	70-10-10	70-20	75	60-20-10-5	70-2½	60-20-5	60-20-5	60-20-5	60-20-7½
Galvanized C. C. Iron	50-5	50-5	50-5	40-10	40-10	40-10	40-10	40-10	40-2½

Sash Cord.—The market for Cotton Braided Sash Cord is steady at the present time, and may be represented by a quotation on the standard grade produced by all leading manufacturers of 20 to 21 cents per pound, base. There are the usual special concessions for quantity and to the jobbing trade who have been buying rather freely at this level to cover their requirements for a reasonable time. Leading makers assert that none but adulterated Cord is being offered below the extreme price now generally established.

Rope.—Business keeps along on about the same plane as it did in April, with perhaps a slight improvement in the size of orders. All handlers of Rope are carrying light stocks, and not ordering a single coil more than they expect to have demand for. Some manufacturers are still working up raw material bought at much higher prices than now rule, so that every pound of Rope sold at present prices represents something of a loss. A sharp increase in demand might enable manufacturers to advance prices. The following quotations, for base sizes, fairly represent the market: Pure Manila, 10½ to 11 cents; B quality grades down to 8 to 9 cents; Pure Sisal, 7½ to 8 cents; lower grades Sisal, 6½ to 7 cents; No. 1 Jute, ½-in. and up, 6¼ cents; No. 2 Jute, ¼-in. and up, 5¾ cents.

Window Glass.—One of the American's machine made Glass factories has closed for repairs, and a hand blown factory has put out its fires. It is assumed that several other factories of this class will go out of blast in the near future, and more will stop work as warm weather becomes continuous. The quantity of Glass which has been and is now being produced is largely in excess of demand, and the indications are that production must be curtailed or prices reduced, as but few of the manufacturers are in a financial condition to carry their surplus Glass, according to reports. It is rumored that two new plants with newly patented machines are making and boxing Glass, and that another new machine factory is likely to be started soon. It appears that there is nothing encouraging in the prospective future for hand blown factories. Demand is very light and prices irregular, so much so that it is impossible to name quotations which would represent the market.

Linseed Oil.—Purchases, as a rule, do not anticipate requirements beyond the immediate future, either by carload buyers or those who require smaller quantities. De-

liveries are being made on outstanding contracts, and the demand for small jobbing lots is moderate. Local quotations are as follows: In 5-barrel lots, State and Western Raw, 40 to 42 cents; City Raw, 42 to 43 cents per gallon. Boiled Oil is 1 cent per gallon advance on Raw.

Spirits Turpentine.—The market is slightly stronger in sympathy with the Southern market where buying for export has been a feature. The new crop of Turpentine is coming into market in fairly large quantities. The local market is comparatively quiet, and manufacturers are buying in small quantities. The New York market is represented by the following quotations: Oil Barrels, 46 to 46½ cents; Machine Made Barrels, 46½ to 47 cents.

Trade Items.

At the recent meeting of the Texas Hardware Jobbers' Association at San Antonio, it was decided to join the retail Hardware and Implement merchants of Texas in attacking the law passed by the last State Legislature by which all merchants in the State handling Firearms are taxed to the extent of 50 per cent. on sales of this line. This law, since it became effective last year, has practically prohibited the sale of Firearms by Texas merchants. It is the intention of the jobbers and retailers to make a test of the constitutionality of the law. It is said that in several instances some merchants have evaded the law by leasing Pistols for a period of 50 years or more and obtaining the regular price for them. It is also stated that during the period of 9 or 10 months during which the law has been in operation only two Pistols have been sold in Texas, according to the tax receipts records of the State Comptroller's office.

THE O. C. WHITE COMPANY, Worcester, Mass., maker of White Standard Adjustable Incandescent Lamp Fixtures, has appointed Frederick Rall, 16 Murray street, and 19 Park place, New York, as New York selling agent. He will carry a complete line of samples and a sufficient stock of leading styles will be maintained in the New York stockroom to insure prompt deliveries.

A SLIGHT FIRE occurred on the 2d inst. in the basement and subbasement of Neal & Brinker Company's store, 18 Warren street, New York. The damage done was covered by insurance and was confined to a few heavy goods kept in that part of the building. The conduct of the business was not interfered with in any way.

THE GLEASON-PETERS AIR PUMP COMPANY has recently increased its capital from \$10,000 to \$75,000, and removed from 181 Mercer street, New York, to a new plant at 256-261 Classon avenue, Brooklyn, where it enjoys increased facilities for conducting its growing business.

PHILLIP GROSS, president, and Charles E. Mueller, secretary and treasurer of the Phillip Gross Hardware Company, Milwaukee, Wis., arrived at Naples, Italy, April 16, in company with Mrs. Mueller. They will tour Europe for a few months and also visit manufacturing centers well known in the production of Cutlery, Hardware and Kitchen Furnishing Goods.

Sheet Metal Ware Automobile.

THE CHAS. F. HAUCK COMPANY, Springfield, Ohio, has sent us the photograph reproduced herewith of an ingenious and effective window display recently used. It represents an automobile made of kitchen utensils and other articles usually carried in a Hardware store. The comment aroused by the clever affair was such that the company got out a souvenir postal card reproducing it, which has proved a telling advertisement. Explaining and describing the display, the company writes us interesting detail, as follows:

Our window floor is low, being 18 in. from the sidewalk. It is 8 ft. wide and 6 ft. deep. The floor was covered with Paroid Roofing, on which was placed the automobile in a diagonal position. In the rear corner of window we displayed Paroid Roofing, and in the front corner we used Butcher Knives to represent the curb and Table Knives for the sidewalk.

The automobile was constructed by nailing three narrow boards onto the cross pieces, which formed the axles. On the ends of the latter were nailed two strips crosswise, on which we fastened Rinsing Pans to represent the wheels. The upper front section consisted of two Copper Wash Boilers, with a Lantern in front. Originally we had a Searchlight Lantern with an incandescent light, which was lighted at night. This gave out such a bright light that on the last day of the exhibit we were entirely sold out of these Lanterns and had to replace same with a Dashboard Lantern, as photograph shows. The guard in front of the man is a large size Window Screen. The rear section is composed of two Gasoline Stove Ovens side by side, with two Dripping Pans on top, in which we displayed promiscuously different cooking utensils. The auto floor is covered with paper lined Stove Boards. The seat is made of Bread Boxes, on the side of which are placed Bread Pans, with a small House Lantern for a side light. On behind we hung our store number, 59, made with house numbers fastened on a piece of sheet iron.

For steering apparatus we used two center tube Cake Pans, connected by a piece of 2-in. Conductor Pipe, with a Funnel for a horn and an Oiler inserted in the small end to represent the bulb. On the right hand side of automobile were placed Stove Pokers to represent the levers.

The tin man is made as follows: Body, a 10-gal. Milk Can; legs, 5-in. Adjustable Elbows; feet, Flour Scoops; arms, 3-in. Adjustable Elbows; hands, Garden Weeders; head, two White Enameled Mixing Bowls, with Lantern Wicks pasted thereon to represent hair. The goggles are made from two Tin Tea Strainers fastened together with a Tea Kettle Lid Knob, using Gate Hooks for the side fasteners. His hat is a graduated gallon measure.

This exhibit, with the sign shown in the photograph, attracted a great deal of attention. People whom we thought seldom passed our store would remark about the display. So many suggested taking a picture of the auto that we decided to get it out as a souvenir postal card, and it has taken like wild fire.

Our local papers gave us a write-up on the display, which helped to advertise it the more, and, all in all, we consider it the best display we ever had, and we give a great deal of attention to our window displays, as we find it to be our best paying advertisement. As to our store, we have a room 200 ft. deep, and in the fall we display as many as 200 different styles and sizes of Stoves. We carry a full

line of Kitchen Furnishings, Cutlery, Sewing Machines, &c. In addition to our store we conduct a shop in which we do all kinds of sheet metal work, tile and slate roofing. We are believers in newspaper space and use a liberal amount.

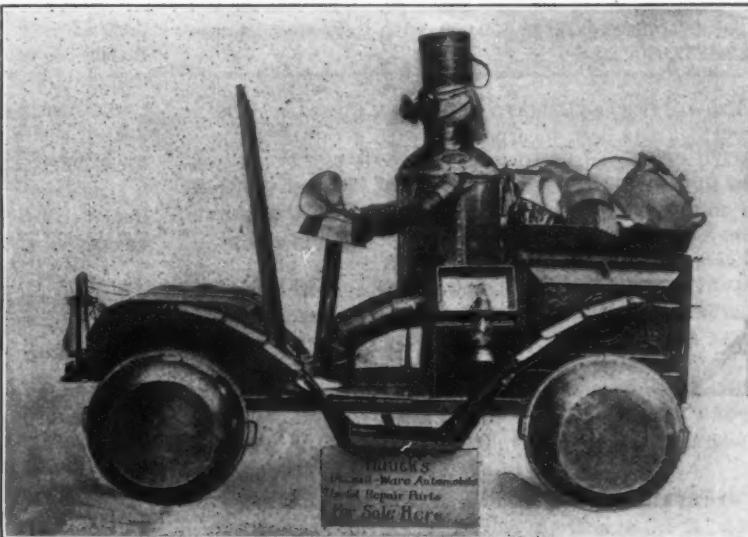
AMONG THE HARDWARE TRADE.

The stock of F. F. Wagenschuetz & Co., 230 Oliver street, North Tonawanda, N. Y., was recently damaged by fire and water, to the extent of \$1500, fully covered by insurance. The firm handles a retail stock of Shelf Hardware, Stoves, Tinware, Agricultural Implements, Paints and Oils. They also carry on plumbing, tinsmithing and furnace work.

The Jordan Hardware Company, Willimantic, Conn., wholesale dealers in Hardware and Sporting Goods, has increased its capital stock from \$34,000 to \$100,000, the purpose of the new money being to take care of the company's expanding jobbing trade.

Milton A. Benson has succeeded M. A. Benson & Co., Saranac, Mich., in the Hardware business.

The Scott Hardware Company, Sullivan, Ind., has been organized and incorporated with a capital stock of



Sheet Metal Ware Automobile.

\$22,000 to succeed the Hardware firm of Scott Bros. Walter Scott, who was the active manager of the old firm, will continue with the new company in the same capacity. Among those interested in the newly organized company are A. D. Scott, J. H. Gordon, Wilkey Herbert, E. C. Thomas, Solon Brokaw and R. W. Akin.

The Leonard Hardware Company, Springfield, Mo., heretofore a copartnership, has been incorporated with a capital stock of \$15,000. The company has recently moved into a larger and more convenient store and has added considerably to its stock.

The Lee Hardware Company, Fort Gibson, I. T., has been incorporated with a capital stock of \$15,000, and will deal in Hardware and Implements, Wire and Field Fence, Harness, Stoves, Sewing Machines, Paints and Oils. Among those interested are Earl Hartman, R. Lee and J. C. Howell.

Linton Hardware Company of Esbon, Kan., has opened a branch store at Lebanon in the same State. The line handled includes Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting Goods, Incubators, Harness and Vehicles.

Humboldt Hardware Company, Humboldt, Tenn., C. C. Peal, manager, has been incorporated with a capital of \$4000.

COMING RETAIL HARDWARE CONVENTIONS

MISSISSIPPI ASSOCIATION, Greenwood, May 11 and 12. Secretary, John E. Sommers, Clarkdale.

GEORGIA ASSOCIATION, Indian Springs, May 19, 20, 21. Secretary, Gary Vinson, Waynesboro.

ALABAMA ASSOCIATION, Montgomery, May 28, 29. Secretary, L. G. Smith, Ensley.

ARKANSAS ASSOCIATION, Hot Springs, June 9, 10 and 11. Secretary, Chas. E. Taylor, Little Rock.

CAROLINAS ASSOCIATION, Wrightsville Beach, N. C., July 8, 9, 10. Secretary, Paul W. McLure, Greenwood, S. C.

OKLAHOMA ASSOCIATION, Oklahoma City, July 14, 15 and 16. Secretary, D. C. Patterson, Oklahoma City.

MICHIGAN ASSOCIATION, Detroit, August 13, 14, 15. Secretary, A. J. Scott, Marine City.

Requests for Catalogues, Etc.

The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM J. T. JOHNSON, Kingston, N. Y., whose stock of Shelf and Heavy Hardware, Paints, House Furnishing and Sporting Goods, Factory, Mill and Blacksmiths' Supplies was destroyed by fire April 30. The loss is estimated at from \$40,000 to \$50,000, with insurance amounting to \$32,000.

FROM CUBBEDGE-REDDING HARDWARE COMPANY, Macon, Ga., which has been incorporated with a capital stock of \$25,000. The company does a wholesale and retail business in Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting Goods, Crockery and Glassware.

FROM DOAK-MACKEY HARDWARE COMPANY, Wetumka, Okla., which has added to its stock Furniture and Undertakers' Supplies.

FROM HOWELL & TOYER, who have recently opened a store in Rupert, Idaho, handling Shelf Hardware, Stoves, Tinware, Sporting and Athletic Goods.

FROM ARMSTRONG-BARROWS HARDWARE COMPANY, formerly J. B. Armstrong & Co., which has recently been incorporated with a capital of \$10,000, to conduct a wholesale and retail business in Norfolk, Va., at 111 Commercial place. The company carries Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Glass, &c. Extensive improvements have been made in the store.

FROM ANDREW J. LA FLEUR, who has opened a plumbing, gas fitting and heating shop at 355 Walnut street, Springfield, Mass.

FROM C. M. BULGER, Aurora, Mo., whose store was recently badly damaged by fire, the stock including Shelf, Hardware, Stoves, Tinware and House Furnishings. Business was resumed the day after insurance was adjusted. The burned building is being repaired and Mr. Bulger is erecting a new building adjoining the one that was burned, which he will also occupy.

FROM MERRY HARDWARE COMPANY, which has purchased the business of the Fraser-Moore Hardware Company, Stillwater, Okla. The new company handles Shelf and Heavy Hardware, Stoves, Tinware, Sporting and Athletic Goods, Harness, Saddlery, Wagons, Buggies, &c.

FROM JOHN S. MENAGH COMPANY, 134 Newark avenue, Jersey City, N. J., which suffered a loss by fire on May 1, estimated at \$100,000, partially covered by insurance. The company will resume business as soon as alterations can be made in the newly rented building.

143 Newark avenue. Until such time the company's headquarters will be at 191 Morgan street. The lines handled included Shelf and Heavy Hardware, Paints, Oils, Cordage, House Furnishings, Electrical, Mill and Contractors' Supplies, &c.

Price-Lists, Circulars, Etc.

Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

CHASE FOUNDRY & MFG. COMPANY, Columbus, Ohio: Catalogue No. 8 devoted to Trucks and Cars. The line is most complete, including a large variety of Trucks for various uses; also Cars for industrial purposes, contractors' and General Purpose Cars, Track and Switches, Wheels and Axles, Boxing and Repairs, &c.

BUTLER BROTHERS, Chicago, New York, St. Louis and Minneapolis: Mid-spring catalogue, No. 664, covering a large line of goods appropriate for the Hardware trade.

SEARLS MFG. COMPANY, Newark, N. J.: Catalogue No. 20, relating to Nickel Plated Bathroom Fixtures, including Towel Racks, Sponge, Soap, Tumbler, Tooth Brush and Toilet Paper Holders, &c.

MONARCH GRUBBER COMPANY, Lone Tree, Iowa: Annual catalogue devoted to Monarch Stump Pullers, Royal Pitless Wagon Scales, Royal Gasoline Engines and Royal Cement Block Machines.

UNITED STATES CARTRIDGE COMPANY, Lowell, Mass.: Score book in stiff binding for Caliber .30 Military Rifle Shooting.

CREAMERY PACKAGE MFG. COMPANY, Rutland, Vt.: Illustrated price-list of De Laval Cream Separators and a variety of dairy apparatus and supplies.

J. E. PORTER COMPANY, Ottawa, Ill.: Illustrated catalogue of Feed and Litter Carriers, Overhead Switches, Barn Door Hangers, Hay Carriers for circular track and fixtures, etc.

THE steady growth of his business having made necessary larger and more commodious quarters, James L. Neefus, manufacturers' agent, removed May 1 to 103 Chambers street, New York. At the new location Mr. Neefus will carry a larger and more complete stock than formerly of Lincoln-Williams Twist Drill Company's Carbon and High Speed Drills, Bay State Tap & Die Company's Taps, Dies and Screw Plates, Chisholm & Moore Mfg. Company's Cyclone, Moore, Standard Screw and Direct Differential Chain Hoists in all sizes from $\frac{1}{4}$ ton to 10 tons capacity. He will thus be in a position to fill orders complete on receipt.

WIEBUSCH & HILGER, LTD., formerly located at 9-15 Murray street, New York, have sent out to the trade a circular announcing their removal to the new Hardware Building, corner of Lafayette and Walker streets, New York. The company's offices are on the second floor and may be entered by a private entrance on Walker street or from the elevator entrance on Lafayette street. The circular bears a picture of the building and also a map of the lower end of Manhattan, showing the comparative position of the new location and the most convenient methods of transportation by which it may be reached.

L. J. BARWOOD COMPANY, Boston, Mass., manufacturer of Leather and Fiber Specialties, is calling special attention to the extent of the line of Leather Washers which it manufactures, and has issued a clever illustration showing a Washer 3 ft. 7 in. in diameter, held by a workman who is looking through the hole in the hide from which it was cut. In his other hand the workman holds fully 1000 little Washers, measuring less than $\frac{1}{4}$ in. in diameter. The design affords a striking illustration of the scope of the company's line.

CATALOGUE FILE OF N. T. BUSHNELL COMPANY.

THE problems presented by the catalogue department of an enterprising Hardware store are numerous and to many merchants decidedly perplexing. They include not only the accommodation of catalogues, price-lists, circulars, &c., in some Problems Involved. convenient and easily accessible way, but also efficient methods of keeping track of incoming printed matter, classifying and indexing goods, compiling lists of manufacturers, &c.

There is, perhaps, no class of merchants who, in the conduct of their business, require as great a number of



Fig. 1.—Catalogue File of N. T. Bushnell Company.

catalogues as Hardwaremen, or have occasion to refer to them as frequently. The scope of the Hardware business, which in many instances includes supply lines, is so great that even in regard to regular goods frequent reference to catalogues is necessary. There are also a great

An Efficient System Needed. many goods which, because of infrequent demand or for some other reason, it would not be economical to carry in stock, but which are occasionally called for. Such articles a merchant can sell from the printed description and illustration, securing them by special order from the manufacturer or jobber with whom he deals. Thus it is important not only that

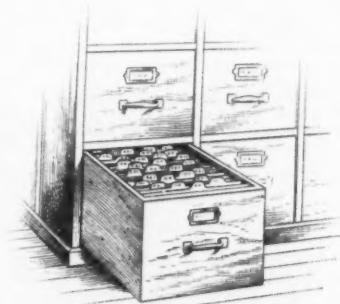


Fig. 2.—Drawer in Catalogue File.

catalogues should be accessible on requirement, but that it should be arranged to keep some record of their contents.

The accompanying illustration (Fig. 1) represents the catalogue filing case used by N. T. Bushnell Company, New Haven, Conn., and built to its order. The main

body, in which the drawers are contained, is about 5 ft. wide by 4½ ft. high and 2 ft. deep. The upper shelves contain bound volumes, &c., which because of their size and the frequency with which they are referred to are kept ready at hand. Between these shelves and the working desk will be observed three drawers. The wide one at the left has nothing to do with the catalogues, being used to accommodate an alphabetical file of current invoices, covering incoming shipments. The two smaller drawers contain card indexes, one under **Cross Index.** goods and the other under firm names. Sample cards from both indexes are reproduced in Figs. 3 and 4. The reader will appreciate that while the index under firm names is easily made and kept up by adding cards for new concerns whose catalogues are received, the index of goods is much more difficult to handle, involving, as it does, questions of classification

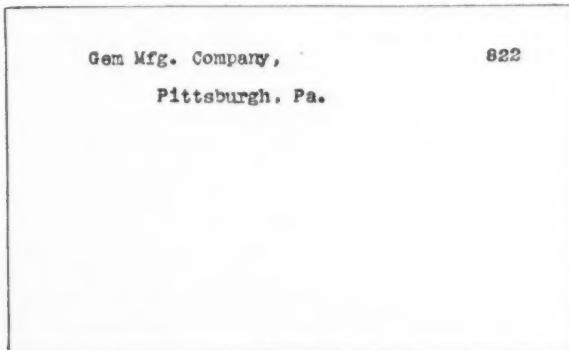


Fig. 3.—Card from Index of Manufacturers.

and the selection of specific articles from almost every catalogue. For instance, it must be decided whether steel goods shall be treated under one classification or whether separate cards should be made out for Hoes, Rakes, Forks, &c. **Methods of Classification.** Again, it must be decided to what extent subclassification shall be carried—that is, whether different varieties of the same article shall be kept on the same or on different cards. These questions the merchant would, of course, have to decide according to his peculiar requirements and his facilities for keeping up the catalogue department.

The drawers for the accommodation of the great bulk of catalogues, circulars, &c., are divided by tab

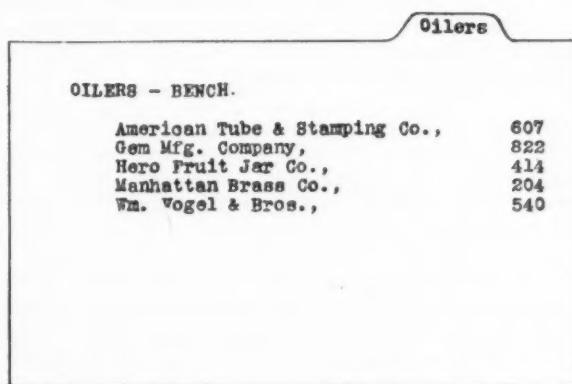


Fig. 4.—Card from Index of Goods.

sheets, such as are used in what is known as the vertical filing system, Fig. 2. The sheets are numbered consecutively, running in Bushnell Company's file to upward of 1500. Corresponding numbers are put on the outside of each catalogue, with a pasteur like that **Use of Drawers.** appearing on the catalogue which lies on the shelf in Fig. 1. But one catalogue or circular is kept between sheets except in instances where a manufacturer issues several publications referring to different lines, in which case they are kept together. On the outside of the drawers are card

frames showing the range of sheet numbers which the drawers contain.

From the above the reader will doubtless understand that in looking up the catalogue, for instance, of the Gem Mfg. Company it is only necessary to get their number from their card in the manufacturers' index and turn to it in the proper file drawer. If, on the other hand, Oiler manufacturers are wanted, without knowing just which one, they can readily be found and their catalogues looked up by reference to the other index under goods.

Death of Thomas B. Rayl.

THOMAS B. RAYL, head of the T. B. Rayl Company, died at his home in Detroit, Mich., April 26, of Bright's disease, after an illness dating back four years, which had necessitated his retirement from active business. Mr. Rayl was born in Wooster, Ohio, January 26, 1838, his genealogy going back to colonial days. He began his business career early, in a hardware store in Wooster, where his ability, integrity and obliging disposition made him indispensable to his employer, who finally took him into partnership. The new firm was Donnelly, Rayl & Co., of which Mr. Rayl had the entire management. In 1872 he went to Detroit, engaging in the commission business, but in 1875 a hardware store on Woodward avenue being for sale, Mr. Rayl, with Dudley W. Smith, bought out Arthur Glover, the proprietor, and the T. B. Rayl Company was established, continuing under the same style ever since. In a tribute paid to his memory Mr. Smith, his partner, said that Mr. Rayl was "a gentleman by nature, full of the milk of human kindness, thinking no evil, charitable always in speech and thought, pure minded, generous hearted. He possessed the affection and esteem of the employees of the company always and without exception."

The International Rifle Contests at Bisley.

OWING to lack of funds to cover the expense it has been understood that no American Rifle team would be sent to represent the United States this year at the International Rifle Contests at Bisley, England. In this juncture, however, the United States Cartridge Company has offered to pay the entire expense of such a team. This contest forms a part of the Olympic games which will be held in the Olympic stadium in London, but the shooting competitions under the management of the National Rifle Association of Great Britain will be held as heretofore at Bisley. Gen. James A. Drain, president of the National Rifle Association of America, has acknowledged the company's generous offer, and at a meeting of the Executive Committee called for this purpose the proposition was accepted with thanks and a committee appointed to proceed with the organization of a team.

L. KERREMAN is now in New York for a stay of about two months, his headquarters while here being with Henry W. T. Mali & Co., 73 Fifth avenue, New York. Mr. Kerremans is the representative of H. & P. Giros, Ancerville (Meuse), France. The object of his visit is to arrange with American manufacturers for representation of their products in French and Belgian markets. In addition to marketing lines of goods made from various metals, the house has its own factory in France, employing several hundred people, and this has facilities for undertaking the production of patented specialties of American origin under suitable agreements as to royalties or shop rights. We are informed by Mr. Kerremans that his principals are manufacturers of various kinds of goods made from steel and brass; that they also make Sewing Machines, and are Gun makers to the French Government, having business relations also with other foreign governments in Firearms.

THE FAETH IRON COMPANY, Kansas City, Mo., has increased its paid up capital from \$150,000 to \$225,000. Its authorized capital was \$200,000, of which only \$150,000 was paid up, the actual increase therefore being \$75,000.

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Hardware Manufacturers on the Business Situation and Outlook

With a view to ascertaining the impression of manufacturers in regard to the volume of business thus far in 1908 and the outlook for the next few months, we have within a few days addressed a number of prominent manufacturers in Hardware and allied lines. Extracts from some of the advices thus called out are given below. They will be of interest as reflecting conditions during the first third of the year, and indicating the opinions of our correspondents, who are peculiarly well qualified to form an accurate judgment in regard to the outlook for business.

CONFICTING REPORTS AS TO APRIL BUSINESS.

FROM A TWIST DRILL MANUFACTURER: Business with us, perhaps, shows a slight improvement as compared with January, February and March, but this improvement is very slight; in fact, we don't anticipate much of an improvement soon—at least until the fall.

FROM A MANUFACTURER OF BUILDERS' HARDWARE: Business for the first third of the year of 1908 has been about 65 per cent. of the sales for the same period in 1907 and 1906. Since the middle of April business has improved, and we are of the opinion that it will continue to improve as the situation politically, financially, agriculturally and crop-wise warrants improvement.

FROM A NEW ENGLAND MANUFACTURER: Although business has been quiet during the first three months of the year, we have been able to continue to run practically a full force upon regular schedule time. During the last fortnight, however, orders have fallen off considerably and we are anticipating a decidedly slow summer, and, no doubt, will be compelled to go upon short time within a week or two.

FROM A MANUFACTURER OF GENERAL HARDWARE: Our business shows only a slight improvement since the year opened. This, to us, is quite disappointing, particularly for the month of April, when we had hoped to see a marked improvement. We are of the opinion that there will be no radical change for the next three or four months, expect a slight increase from month to month unless some new disturbing element should appear.

FROM A MANUFACTURER OF BOLTS AND NUTS: While business is far from satisfactory to us, we are pleased to be able to state that there has been a steady improvement each month during the current year. December was our lightest month. A slight increase showed during January, February and March, and a very decided improvement during the month of April. We think the steady, though possibly slow, improvement will continue during the summer months. One

Frequent Orders and Rush Shipments. One of the striking features of the present business is that while the great bulk of purchasers are ordering in comparatively small quantities, they are ordering frequently and desire shipments made immediately upon receipt of order, showing the demand to be legitimate and the stocks in the hands of consumers small. Collections are very good and, taking it altogether, we think the conditions are encouraging.

FROM A MANUFACTURER OF TWIST DRILLS: The situation as it appears to us is somewhat mixed at the present time. During March our orders were exceptionally good, and it seemed as though business had begun to come back. During April, however, results have been somewhat disappointing. We think the general feeling is rather optimistic and the development of the past few days would perhaps be responsible for this condition. For the next few months, however, we do not look for any resumption, as in all probability it will take some little time to get over the policy of ordering from hand to mouth. Like others, we are hoping every day that business will show a material improvement.

FROM A MANUFACTURER OF MECHANICS' TOOLS: Considering the general state of business, we have had no cause to complain of not getting our share during the first three months of the present year. Our sales have been about 60 per cent. of what they were for the corresponding months of last year, when they were abnormally high. Generally, March is by far the biggest month in the year with us, and April sales usually drop off considerably from March. This year, however, April sales have been about the same as March sales. We have been getting about the same number

Orders Numerous but Smaller. of orders as usual, and our salesmen get orders from almost all of our old customers they call on and send about the usual amount of new business, but the orders are smaller than last year. We expect that there will con-

tinue to be a fair amount of business during the present year, and that unless something unforeseen happens, business will show a decided improvement in the first part of next year.

FROM A PENNSYLVANIA MANUFACTURER: During the first two months of this year our shipments ran behind those of last year, but March went slightly ahead and April will about equal last year. Our business at the present time seems to be just about as good as it has been in former years. We, of course, make a large line of goods which are sold only during the spring months, and as we are constantly producing new articles, we believe that our business would keep up to its usual average, where a great many concerns that are making standard lines, would not. We also

Collections Are Better. find that collections are better than they were a couple of months ago, although we do not believe they are quite as good as a year ago. We look forward to a good business until July 1, but after that time it is somewhat of a problem, although we see no reason why after the political situation is settled a little, business should not resume to a certain extent its former condition, owing to the fact that we find very few people in any line that have much stock on hand to speak of.

A FALLING OFF IN BUSINESS OF FROM 15 TO 33 1/3 PER CENT. SO FAR IN 1908.

FROM AN OHIO MANUFACTURER: We have been fairly busy all along, but the volume of business has been considerably less, anywhere from 15 to 20 per cent. than last year during the same period. Buyers order frequently in small quantities, and every one is in a hurry. Our business is reasonable and we do not look for much improvement this season, which will end about August.

FROM A MANUFACTURER OF FILES: During the past four months there has been a gradual improvement in the demand for goods, but the volume has only been 75 per cent. of what it was during the same four months of 1907. We anticipate a gradual increase month by month during the balance of the year, but we do not expect business to become normal until after the Presidential election, and if the proper man is elected we see no reason why the volume of business should not return, as the crop indications are quite favorable.

FROM A MANUFACTURER OF TAPS AND DIES: Since January 1 we have received about two-thirds of the amount of business we had during the same period in the years 1906 and 1907. At the present time indications are not very bright, and the outlook for the future is a hard proposition to answer and one we could not give much information on.

FROM A MANUFACTURER OF SHEARS: Sales during the first third of the year have fallen off practically 15 per cent., which we consider a very low percentage when the general condition of the country is taken into consideration. From what we know we believe that for our business the conditions during the first third of the year are very apt to continue during the balance of this year, expecting probably during the last two months of 1908 a brighter prospect.

FROM A MANUFACTURER IN OHIO: Buyers are purchasing our goods very cautiously. The prospect for the next two months will depend somewhat on the hay crop. Our business is from 20 to 25 per cent. less than one year ago, which was our banner year.

FROM A NEW ENGLAND MANUFACTURER: Our business year dates from August 1 last, and for the period ending May 1 our business will show a falling off of about 20 per cent. from corresponding period a year ago. Based upon our orders from August 1 last to May 1, with a conservative estimate of the business we shall probably secure for the next three months, we estimate our business for the year at about 85 per cent. of what it was last year, and rather more than an average for five years past, including 1907. We are inclined to the opinion that general business will gradually but very slowly improve during the next six months, but we do not

look for any radical improvement until after the political situation is much clearer than at present, and the crop prospects for 1908 fairly well determined.

AN EASTERN MANUFACTURER'S VIEW OF BUSINESS AFTER A TRIP TO THE WEST AND SOUTH.

The writer has just returned from a long business trip and is giving your inquiry immediate attention.

Our sales during January and February were 61 per cent. of last year.

During January, February and March they were 72 per cent. of last year.

During January, February, March and April they were 80 per cent. of last year.

April itself showed a few dollars more than the corresponding month last year in dollars and cents. Since prices have gone down, it is apparent that we moved more goods in April this year than a year ago.

The writer has recently been in conference with a majority of the manufacturers of the country in his line, and has just swung round the Mississippi Valley, returning up the Gulf and Atlantic Coast. During this time he talked with a number of prominent merchants, and found a comparatively unanimous verdict on the following propositions:

1. That business during the past month has greatly improved.

2. That prospects for business during the next couple of months are comparatively bright.

3. That stocks of goods in the hands of jobbers are very low—insufficient to last more than a month longer at the outside.

4. That a large fall business is anticipated, especially between the Mississippi and the Rocky Mountains, the Southwest being particularly prosperous at present.

It is worthy of note that a large Western jobbing house has given orders to its factories to proceed at once on full time, making goods for the fall trade.

The average business done by people in our lines throughout the territory visited seems to be about 60 per cent. of last year.

BUSINESS LARGE ENOUGH TO TAX CAPACITY OF SOME PLANTS.

FROM A MANUFACTURER OF HOLLOW WARE: So far as we are concerned, business has been for the most part satisfactory. Our factory has been running full all winter and there has been no dearth of orders at any time and at the present we are running full. We cannot say how long these conditions will last, but there are no indications to warrant our taking a pessimistic view of things so far as we are personally concerned. We do not care to make any predictions as to future business, but have great hopes of continuing in our healthy state for some time to come.

FROM A MANUFACTURER OF LAWN MOWERS: While we believe the country has been passing through a period of financial and industrial depression, we can truthfully say that it has not affected us in the least. We have run our factory to its fullest capacity and the outlook for future business was never better. We anticipated that we would "get ours" next fall when we

Empty Market Next Fall. went after business for 1909, but the last 10 days or two weeks has dispelled that

notion, for many of our largest jobbing customers are sending us supplementary orders, which indicates that they have sold their stock and are obliged to buy again, and assures us of an empty market next fall. All of this, of course, is very gratifying to us, and we presume the same conditions prevail with our competitors. We hope so.

FROM A NEW ENGLAND MANUFACTURER: The total volume of orders for — has more than equaled our record for 1907. There is a decided distinction, however, in that both wholesalers and retailers are extremely reluctant to specify in advance for their requirements. The result is that we are constantly receiving a great quantity of rush orders. Dealers apparently wait until they have actual orders on hand, or at least every evidence that orders will be received immediately, before placing specifications. They then, of course, want the goods without delay. A number of them want them the day before they order.

FROM MANUFACTURERS OF SCREW CUTTING MACHINERY: We can give you nothing except a most encouraging report of the present condition of trade. Although our business has not returned to a normal state, it is so near so that we feel as though the conditions are in a much more healthful state than they were even before

"Hard Times" Are Passing.

the financial distress of last October, for at that time we were doing business at a high pressure and the conditions were far from healthy as far as trade was concerned. We are now doing as large a business as we were in the early months of last year, and the prospects for the future seem to be gradually improving. We therefore have reason to congratulate ourselves that the apparent "hard times" are passing and that business soon will be in a most healthy condition.

BUSINESS IN THE AGRICULTURAL IMPLEMENT LINE HAS BEEN EXCELLENT.

FROM A PENNSYLVANIA MANUFACTURER: The first third of the new year's business has been very satisfactory, and, strictly speaking, we have nothing to complain of, and should business continue with us as it is we will certainly be ahead of last year's business. At present we see no signs of letting up.

FROM AN EASTERN MANUFACTURER: Our business up to April 1 showed an increase over that of last year, and we hope for as much business during the next few months.

FROM AN OHIO MANUFACTURER: For our part we will say that the Implement business has been very good this season, in fact, surprisingly good, though there was quite a lull in buying from October to December 1. Trade has picked up since that time and the volume of business is somewhat larger than during the corresponding period of the preceding year. In fact, our factory was compelled to work 22 hr. a day to keep up with the rush orders. The Implement business, however, would not suffer as much as other businesses at such a time, owing

Working Overtime on Rush Orders. to the fact that there have been no short crops, conditions have been favorable in general, and the farmer is generally considered very prosperous.

We understand, however, from various sources that the Implement business taken as a whole is not up to the average, and, considering this, a largely increased trade is looked for this coming fall and spring. There may be a tendency to hold off buying until prices of raw material have been determined for the coming year, but we do not believe this will be general. Every indication points to prices being held on present basis, at least, throughout another year.

ADVANTAGE OF HAVING AN ESTABLISHED EXPORT BUSINESS.

FROM A MANUFACTURER OF FILES: Trade, especially domestic, at the present time is rather dull with us; in fact, if it were not for our export trade we would be on half or three-quarter time, but are now working full time and full handed. Of course we are gradually catching up on export trade, and if our domestic orders do not increase in the near future, we may be compelled to go short time. The outlook at the present time is rather peculiar; from some sources it looks as if trade is reviving, while from others it looks as if trade will continue the way it is now until after the Presidential election. Considering the condition as a whole, we feel buoyed by the outlook and are going to do our very best to keep full time until conditions become normal.

FROM A MANUFACTURER OF PUMPS: During January and February our business was about 60 per cent. of normal. During March it was over 80 per cent., and during April it has been about normal. We are running our plant full force every day and are nearly four weeks behind orders, and we feel very much gratified with these conditions. It is, of course, difficult to tell what the future outlook will be, but if business continues with us as it is now we certainly will have no cause for complaint. Our export business so far this year has been the best of any period in our history. We are making a high grade line of Pumps and Enamelled Ware, and we attribute very largely the fact that we are having a satisfactory business to the quality of our goods. We believe that a large portion of the trade are paying more attention to quality than a few years ago. Prices on some of our goods are too low, but taking everything into consideration, we are well satisfied with conditions.

JOBBERS AND RETAILERS ARE CARRYING LIMITED STOCKS.

FROM A CONNECTICUT MANUFACTURER: Business fell off to a very considerable extent in the months of December and January, but we gained somewhat in the months of February and March. Even now, however, we are a long way from normal. There is abundant evidence

that jobbers are running their stocks as low as possible. They are ordering in quantities much smaller than usual and want the shipment of their orders rushed.

FROM A MANUFACTURER OF HEAVY HARDWARE: In the past four months we have done about 70 per cent. business, that is, 70 per cent. of a normal year's business, which is less than 60 per cent. of 1907 business. Our factory has run on an average, during the last four months, of about 36 hr. per week, as against 52 hr., under normal conditions. Until within the last two weeks we have not laid any of our men off, excepting a day or two occasionally, deeming it wiser to employ the full force and run shorter hours than would otherwise be necessary.

As to the future, we cannot foresee anything for the next four months, as under **Favorable Conditions.** "normal" conditions May and June are always light months with us. We are at present working "from hand to mouth," depending on the mails and our agents to send us orders from day to day to enable our factory to run along. However, we feel optimistic as to better conditions, everything being in favor of an early resumption to normal conditions, especially if the Presidential conventions should result in strong conservative men being nominated by both parties. There are very little stocks in the market in our line among the jobbing trade, and even with the retail trade we find that the stocks are reduced considerably. We are not increasing our stock in the factory, so that any movement for increased trade will be felt immediately all along the line.

FROM A FIREARMS MANUFACTURER: Our business has been materially reduced since November 1 last. Our dullest months were December, 1907, and January, 1908; February showed an improvement over January, March was better than February, and April is still a little better. We figure that we are doing about what was a normal business of three or four years ago, but we are off a little bit from 1906 and still more from 1907, which was an abnormally good season. Our production has been curtailed in proportion to our sales, so that we have not accumulated an overstock for the time of year, and the best information that we can gather

Shortage of Goods in the Fall. is that stocks in jobbers' and retailers' hands are only about 70 to 75 per cent. of what they were a year ago, so that the total stock of our goods throughout the country is much smaller than it was last year at this time. As each month so far has shown an improvement, and as we are now pretty close to a normal business, we hope and expect that this fall will develop a good demand, and if it does and the jobbers and retailers get their courage back and put their stocks into normal condition, there is a decided probability that there will be a shortage of our goods. In the expected event of a good fall crop we shall be much disappointed if we do not have all we can do in the fall of 1908 and spring of 1909.

FROM A MANUFACTURER OF HEAVY HARDWARE: Our shipments for the four months ending to-night are almost exactly 50 per cent. of what they were in the busy months of the first third of 1907; consequently, all things considered, we are fairly well satisfied, as we think we have got our full share of the business. As to the outlook for the next few months, we look for the usual mid-summer dullness for May and June, with probably some increase in July after the political nominations shall be made and knowledge had of actual crop conditions. From

Year Will Close with a Rush. all reports in our diversified trade throughout the entire country, we find that buyers for six months have been reducing their stocks and will probably continue to do so until late midsummer or early fall; but in the last quarter of this year I am looking for a very considerable business—larger than the last quarter of last year.

CONSIDER OUTLOOK FOR BUSINESS SOMEWHAT UNCERTAIN.

FROM WIRE GOODS MANUFACTURER: We are sorry to say that the outlook is not very encouraging. There is, we think, a fair volume of business, which we expect will continue throughout the year. Were it not for the fact that we have just passed through two or three years of splendid business our present shipments would be quite satisfactory. As compared, however, with the business of the last two years it shows a constant tendency to decrease rather than increase. We do not look for any change until after election this fall.

FROM MANUFACTURERS OF WIRE: Our business during the first third of the year has been fairly good in several departments. In some departments, however, we have been obliged to run only half time. The outlook at pres-

ent seems to be rather discouraging, and business has dropped off with us considerable during the past few weeks, but it may be on account of some seasonable goods which we manufacture more than from any other cause. In a few of our smaller lines we think we can see some improvement during the past month.

FROM A NEW JERSEY MANUFACTURER: During the first three months of the year our business was fairly good, but the outlook for the next few months is not very encouraging.

FROM A MANUFACTURER OF MECHANICS' TOOLS: We of course suffered a reduction in our business as compared with last year. At the same time we had already discounted the future. As a matter of fact, our trade has kept up much better than we anticipated. As to the future outlook, would say that we do not believe that there will be much improvement in business until after the Presidential election. It will all depend upon who is the successful candidate. While we are not pessimistic and believe in the future of this country, yet we do think

Reform Agitation Very Disturbing. that it is very unfortunate that such a continual agitation is kept up in the name of "reform," because in spite of all the good intentions of the would-be reformers their methods are extremely disturbing to business and will continue to be so. What the country needs is a return to common sense and peace of mind. There is very little resumption thus far throughout the Western and Southern country in commercial enterprises, and we doubt if there will be until agitation is checked. A large number of lumber plants are still closed, and many other large manufacturing institutions are running on short time.

FROM A MANUFACTURER OF CARRIAGE HARDWARE: The volume of our business during the first four months of 1908 is practically one-half what it was a year ago during the same period. Prices have been fairly maintained, but the demand has been very light, and the outlook for the next few months is rather dubious, we regret to say. The financial situation seems clearer, and money is more easily obtained, but the demand for goods is very small. However, indications are that no one is carrying any stock, and should there be any improvement in business the general trade of the country would make heavy demand on the manufacturers. We do not look for this, however, during 1908. The political situation is too complex, and it takes time to recover from these periods of depression. We don't like to be pessimistic, but the outlook to us is far from encouraging for a business revival during this year.

FROM AN OHIO FOUNDRY: Our foundry business for the first quarter was about 80 per cent. of the business we did last year, and for the first four months averaged about 78 per cent. of the business of last year. This is in dollars and cents. The tonnage is probably about 83 per cent. of last year. We consider ourselves, however, very fortunate, as the foundries in this section have not had such good business as we have been fortunate enough to obtain. The outlook for the second

Profits Not So Nice as Formerly. quarter of the year, or for the next two months, is not as good as that which we have experienced during

the last four months. We have closed up recently some fairly good tonnage contracts, probably enough to keep us fairly busy for five weeks, but the prices have been chopped down to very close margins, and the profits will not look as nice as we have been in the habit of seeing during the last three years. However, we are not pessimistic, and we believe that things have

Pig Iron Market a Consideration. about touched the low ebb of volume. The pig iron market is weak, and if this gets down to a much lower basis, it

will closely approach cost to the furnaces, and we think will stimulate buying and will loosen up several large contracts that so far have been held up. We do not think that this will reduce the percentage of profits to the founders, but will tend to liven up business considerably.

FROM A MANUFACTURER OF MECHANICS' TOOLS: While we presume general conditions have improved somewhat during the past two months, an analysis of our sales would indicate a falling off. We anticipated when the panic struck us that the first signs of improvement would be followed by a relapse, and this has proven to be the case. The relapse, however, has been more serious than we anticipated it would be, and while we are not pessimistic, we can see no indication of an increased demand.

Much Depends on Crop Output. The first three months of the year showed a falling off of about 21 per cent. as compared with 1907. The first four months of the year will show a falling off of about 25 per cent. As far as the next few

months are concerned, we do not have great expectations. As soon as a good crop is assured we believe the West will commence to purchase more freely; in such an event we look for a gradual return to a normal condition, which should prevail after the first of the coming year. If, however, the crops are not up to the standard, we cannot predict just when an improvement will occur.

FROM A MANUFACTURER OF DROP FORGINGS: So far as our experience is concerned, we have detected but very slight improvement in the general trend of business during the past two or three months. But while orders have increased to no perceptible extent, we think we notice a sort of indirect undercurrent tending to show that purchasing agents are becoming a little more interested, preparatory to coming into the market, and do not appear to have the same confidence in securing lower prices through a waiting policy. We do not, however, look for any normal business conditions for some little time yet.

FUTURE OUTLOOK REGARDED WITH CONFIDENCE.

FROM A MANUFACTURER OF MECHANICS' TOOLS: Business during the first third of the year has been about two-thirds of what it was during 1907. Although we do not think that business at any time during 1908 will be as good as last year we do look for some improvement in the near future over the conditions of the past few months.

FROM A MANUFACTURER OF TWIST DRILLS: We find business getting gradually a little better. Collections are also improving. We feel that owing to the depleted stocks in the country and a better feeling existing it will continue to improve little by little, but nothing of any moment until after the Presidential election. We are running full time with about two-thirds of our 1907 force. Take it all in all, we have an optimistic feeling for the future.

FROM A MANUFACTURER OF BRASS GOODS: Our business in January was better than December, and each succeeding month has brought us a larger volume than the preceding one. Our full running time is 60 hr. per week, and since January we have run from 50 to 55 hr., with sales averaging about the same as 1905, and **Monthly Improvement.** 1906. Jobbers appear to have large stocks and the retailers are inclined to buy sparingly, consequently all orders are very small. Regarding the outlook for the next few months, we believe that stocks with both jobbers and retailers are much reduced and that all have more confidence, and that the worst is over. In our line business is usually quiet through May, June and July, and it looks as though it would be unusually so this year, but we look for a fairly good fall trade.

FROM A MANUFACTURER OF SASH WEIGHTS: Trade conditions during first third of 1908 have been better with us than we expected. Prices have been fairly well maintained, and orders have been considerably in excess of some years, when there was not nearly so much talk of business depression. The outlook during the next few months has very much to encourage, there will not be a boom nor an advance in price, but there will be some orders coming along all the time and the **Low Stocks Will Help Market.** very low stock carried by the dealers puts the market in shape for good business later. Last year, notwithstanding Government reports to the contrary, the crops were not a success, and this fact, I think, did more to affect railroad business than anything else. Our present report on the crop situation shows prospects of a tremendous crop, and if present favorable weather conditions continue the railroad companies' rolling stock will all be employed before the end of the year, and as soon as this happens business will boom.

FROM A MANUFACTURER OF BELTING: In our opinion recovery has started in. We think business will steadily improve and will be in fairly full swing by July 1. The one thing that will do more than anything else to create business activity will be the cut that the **Recovery Has Started.** United States Steel Corporation will have to make in the price of its products. A cut of \$1 or \$2 a ton would create a buying demand, and enough orders probably would be placed to keep the mills all over the country running 60 to 90 days. By that time the worst features of the political campaign would be discounted and business would be almost on a normal basis. The weather conditions have been very favorable to large crops. The accumulation of money in the banks, and the lower prices on building material will create a condition warranting new construction work. The American people are too rich and pros-

perous to allow their money to stay for any continued time in the banks without trying to get some profit on it. Confidence is steadily being restored.

The railroads have held off their buying for practically a year now. The fact that the Pennsylvania had its bond issue over subscribed so many times will hurry the other railroads to put out bond issues to try to get the benefit of this loose money. This will mean a resumption in buying on the part of the railroads. These few reasons and a lot of others will bring about a very rapid resumption of business when once confidence has got its head high enough above water to take a long breath.

FROM MANUFACTURERS OF BOLTS AND NUTS: We see a gradual increase of business since January—each month a little better than its predecessor. Prices are necessarily low, with the small demand. The railroads are the greatest economizers just now; when they commence to buy their full needs, business will be active in iron and steel.

FROM A MANUFACTURER IN CONNECTICUT: We find business improving to a slight extent. The percentage of each month since January 1 shows a slight increase when compared with sales of 1907. It should be stated, however, that we have not used nearly our usual efforts to sell, we might almost say, made no effort to sell, so a comparison cannot be made to show properly. We believe that the advance of the season will show a decided improvement.

FROM A MANUFACTURER OF HOUSEHOLD SPECIALTIES: We are still hopeful of better business conditions at an early date. It would seem as though monetary conditions were now almost, if not quite, normal, and this should bring an early resumption of purchasing by railroads and other large corporations. According to our experience, however, current orders and actual volume of business now on the books show little evidence of activity.

FROM A NEW ENGLAND MANUFACTURER: While the sales in our line have fallen off to quite an extent during the past four months, we are still optimistic and are hoping for a revival. We believe that had we not experienced the extraordinary business conditions of 1906 and 1907 we would feel well satisfied with the present outlook, but, comparatively speaking, the present year is rather unsatisfactory. We really do not look for a re-

A Good Time to Lay Foundations. vival until after the Republican convention, or, possibly, until after election. At the present time we are hopeful that business will revive very materially. We are taking advantage of dull times to clean house, so to speak, and to put our organization and equipment in such shape as they should be in order to take care of present conditions and to lay a solid foundation for the future.

FROM A CONNECTICUT MANUFACTURER: As far as the volume of trade is concerned, with us, there has been a falling off of about 25 per cent. as compared with the corresponding four months of last year. The market during the past four months has been unsteady and some-

A Ship in a Fog. what erratic. It has reflected the conditions of what we call the "times." Trade has been like a staunch ship in a great fog. While the vessel is known to be staunch in every respect and well manned, the navigator finds it necessary to go slowly and with great caution, not knowing what may happen. As to the future outlook, we are very hopeful. We think the fog is not as dense as it was and we can go a little faster. We feel, however, that the improvement in trade will be gradual and that this period of depression will have taught both employer and employee, rich and poor, some very useful lessons, and that the revelations that have been incidental will

Useful Lessons. have led to preventive legislation for the future, and that we shall understand and regard better the rights of each other, and that, perhaps, trade in the future will be done on higher principles and with more regard to what is due to each other.

LEADING MANUFACTURERS of Door and Window Screens are suggesting to merchants that they can increase their Screen business by calling the attention of the public to the sanitary importance of proper screening. Flies are now recognized as disseminators of filth and disease germs and the manufacturers are furnishing their customers with advertising matter on this subject, including circulars quoting news items and a reproduction of a newspaper clipping with a magnified illustration of a fly for pasting in the show window.

Diamond Edge Scissors and Shears Case.

THE NORVELL-SHAPLEIGH HARDWARE COMPANY, St. Louis, Mo., has just brought out a patented Shear and Cutlery Case, which is not offered for sale, but is furnished gratis to merchants handling the company's Diamond Edge line. Case A, illustrated in Fig. 1, contains two sets of upper arms for Scissors and two sets of lower arms for Shears, over 18 dozen Scissors and Shears being accommodated. The case is 25 in. wide, 24 in. high and 13 in. deep. The arms and brackets are full nickel plated. Fig. 2 affords a back view of the



Fig. 1.—Scissors and Shears Case, Front View.

case, with the doors open, showing how the brackets swing out clear of the case and permit convenient handling of the goods. The construction and operation of the brackets are more clearly shown in Fig. 3. They are hung on a vertical rod, and are adjustable up and down to

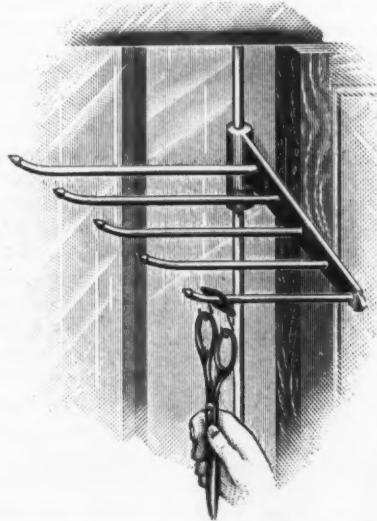


Fig. 3.—Bracket in Scissors and Shears Case.

accommodate any length of Shear. The company also makes a combination Cutlery Case, Style C, which is 36 in. high, 26½ in. wide and 20½ in. deep. It will accommodate 12 dozen Scissors and Shears and 5 dozen Razor Strops. The base contains bins for 42 patterns of Pocket Knives and 12 patterns of Razors. On top of the bins are plush lids with partitions for displaying the same number of items.

Cow-Ease.

CARPENTER-MORTON COMPANY, 77 Sudbury street, Boston, Mass., is manufacturing a preparation known as Cow-Ease, designed to prevent flies annoying horses and cattle. The preparation is referred to as being a clean, clear, nonpenetrating liquid, which does not gum up the hair or blister the skin, as containing nothing injurious and as being absolutely harmless. It is pointed out that keeping flies from annoying cows allows them to feed at peace in pasture, increases the

quality of milk and aids in its flow. The preparation is alluded to as killing lice and vermin; also as driving away flies where it is used. Thus it is spoken of as a desirable preparation to use in spraying the interior of horse stalls and bedding; also in hen houses. The company offers a sprayer, especially made for applying Cow-Ease.

The Willard Steel Ranges.

Wm. G. Willard, 316-320 Chestnut street, St. Louis, Mo., manufacturer of the Willard steel ranges, has added to his 1908 series Nos. 8-18, 8-20 and 9-20, which have right hand flush top, porcelain lined reservoir, full nickel

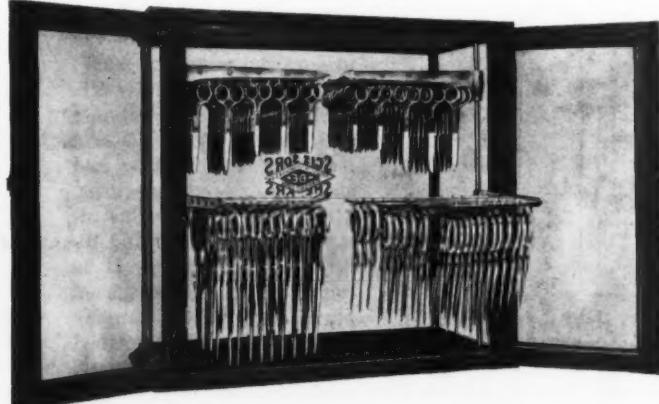
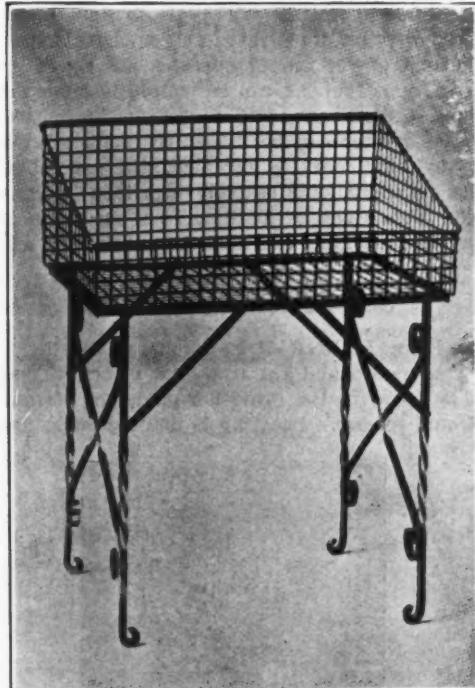


Fig. 2.—Scissors and Shears Case, Back View.

trimmings, nickel tea shelves, register and corner columns, left hand pouch feed, side draft register and large top warming closet with rolling front. The oven is made in one piece of No. 16 gauge cold rolled steel, dustproof. A 40-page catalogue illustrates the entire line of ranges on the right hand pages, the opposite pages containing illustrations and descriptions of the various parts. The catalogue has a space on the last page for address and stamp, avoiding the necessity of using a wrapper for mailing.

The Perfection Metal Bargain Table.

The tray of the bargain table illustrated herewith is made of flat steel, woven 1-in. mesh, while the supports



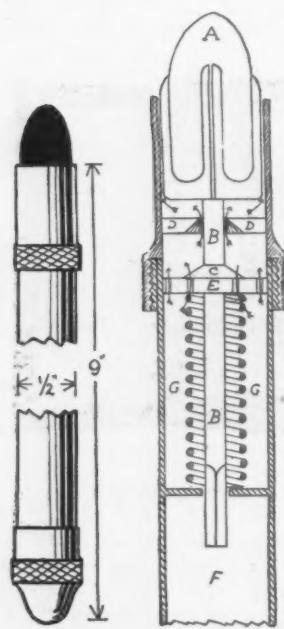
Metal Bargain Table.

are of polished and twisted steel. The tray is 18 x 24 in. in size, and the table is 24 in. high. It is finished either

in oxidized copper or painted a dead black, and is alluded to as being strong, handsome and durable. The table is shipped knocked down and can be put together quickly. Special sizes will be made to order by the manufacturer, the Standard Wire Company, New Castle, Pa.

The Dexter Marker.

A. J. Maier & Co., 234 La Salle street, Chicago, have perfected and are offering a new automatic fountain marking device, shown herewith, for use in marking boxes and packages for shipment and for writing window signs and show cards. It is designed to obviate the unpleasant features connected with the use of the common marking pot and brush by affording a cleanly, reliable and always ready instrument for card writing and shipping room marking. The accompanying illustrations show its form and internal construction. It is composed of a nickel plated brass barrel 9 in. long by $\frac{1}{2}$ in. in diameter furnished with a felt marking tip. A principle of construction which is emphasized as new in this connection is the positive feed provided by the automatic pump plunger E in the sectional view. Instead of depending on gravity flow the ink is driven downward by pressure exerted on felt tip.



The Dexter Marker.

A, when used for marking, which compresses the ink in pump chamber G, forcing it out through holes in plunger disk E in the direction indicated by the arrows. The tip and pump mechanism with which it is connected are prevented from turning by the squared shank extending through a square opening in the bottom of the pump chamber. The marking tip is made of prepared felt, and is said to be very durable, but when worn can be easily replaced by a new one at a trifling cost. When the marker is not in use the ink ceases to flow, and the tip is covered with an air tight cap. For convenience in filling, the end of the barrel opposite the tip is provided with a valve so that ink can be poured in from the spout of a can. Gallon cans, with faucets at the bottom from which the marker can be filled are furnished when desired; any fluid marking ink that will not solidify and contains no ingredients severely injurious to metals can be used. Two styles of marking tips, one for heavy and one for light marking, are furnished with each marker.

Self-Setter Mouse Trap.

The Evan L. Reed Mfg. Company, Sterling, Ill., is offering a mouse and rat trap, the principal feature of which is found in the provision made for its automatic setting and release. The trap is made of wire and steel,



Fig. 1.—Mouse Trap, Set by Hand.

the base being formed of galvanized steel as a protection against rust. To set the mouse trap it is only necessary to

press the lever top with the thumb, as shown in Fig. 1; it is similarly released without endangering the fingers. The rat trap, which is of the same pattern but of larger



Fig. 2.—Rat Trap, Set with Foot.

size, may be set by pressing the lever with the foot, as shown in Fig. 2. Since the spring strikes only in a forward direction there can be no danger either to the finger or foot in setting these traps. They are put up in special counter display boxes handsomely illustrated in a manner to call attention to the striking features of the trap.

The Perfect Double Tang Socket.

In Fig. 1 is illustrated taper shank sockets, put on the market by Cleveland Twist Drill Company, Cleveland, Ohio. The sockets hold taper shank tools, so that the tangs cannot twist off, and old tools with tangs broken off can be ground or milled with new tangs sockets and will give longer service than with their original tangs. The sockets are referred to as having no parts to get out of order or to wear out, and as fitting any spindle having a regular taper hole. They take the same list as regular taper sockets.



Fig. 1.—The Perfect Double Tang Socket.

drills and reamers can be had with double tangs to fit



Fig. 2.—Double Tang Taper-Shank Drill.

the sockets at the same price as regular tools.

Starrett Twin Gas Heater.

L. S. Starrett Company, Athol, Mass., and 132 Liberty street, New York, is manufacturing the Starrett twin gas heater No. 100, several adaptions of which are illustrated herewith. These patented double tube gas heaters have nickel plated burners and japanned bases, and with the attachments are effective in various mechanical arts. They are constructed so as to cause gas and air to become properly mixed for thorough combustion while passing



Fig. 1.—Starrett Twin Gas Heater.

through deflectors in the base of the tube. The tubes are so shaped as to cause the flames to penetrate each other at cross angles, thereby producing a clean intense heat, free from smoke and without waste of gas. The company recommends it for machine shop use for tempering small tools, melting lead and babbitt metals, &c., and as a forge for light work. It can be advantageously used also by plumbers, tinsmiths, electricians, jewelers, dentists, barbers, &c., in the laboratory and household, being capable of boiling a quart of water in six minutes. As will be noted in Fig. 2, burners of various capacities can be furnished in groups of several burners. There are also attachments for holding a melting ladle and dish. Soldering irons having short handles can be used without heating the handle. The two and three burner heaters are made with a graduated adjusting tube on the end to supply gas to one or more burners, according as figures coincide with index marks on the base. For household pur-



Fig. 2.—Groups of Burners and Attachments.

poses an independent gas cock can be attached to a wall gas bracket, an iron gas pipe connected to it and with two elbows run out so that the burner without base can be screwed on in an upright position, and with the dish or kettle holder attachment, boil a kettle of water or otherwise use it for light work, without interfering with light at night from the same pipe. The dimensions of the burner shown in Fig. 1 are 3 1/4 in. high from base to top, and 5 in. long front to back.

Accurate Parts for Automobiles.

The National Cycle Mfg. Company, Bay City, Mich., is making a specialty of manufacturing parts of automobiles to order for automobile manufacturers. The company issues a pamphlet showing some of the parts, individual designs of automobile manufacturers, which it has made. The company claims to do accurate machine work to blue print, to work to the half thousandth of an inch and to

undertake no more work than it can produce accurately and on time. In addition the company manufactures the National bicycles, including a number of models.

The Zims Duplex Wire Stretcher.

The Zims duplex wire stretcher, manufactured by the Burgess-Norton Mfg. Company, Geneva, Ill., and here illustrated, is described as a simple, powerful and well constructed tool for stretching plain and bar wire. The body of the tool consists of a channel in which the two notched bars slide. At the left of the channel, as represented, is attached a chain with a wire clamp, which serves to secure the tool to post or wire. Attached to the ends of the two notched bars, at the right hand end of the stretcher, are wire clamps fastened to swivels, which permit the stretcher to work in any position without twisting the wire. To the vertical handle is attached two



The Zims Duplex Wire Stretcher.

pawls, which engages the notched slide bars, while the two other pawls at the right of the channel, block and hold the notched bars as they are drawn in. In operating the stretcher one notched rod is pulled out and the clamp fastened on the wire to be stretched; the pawl at *a* and *b* corresponding to this bar is then dropped into position, and by working the handle back and forth the bar is drawn in. After a few notches have been taken up the other draw bar is attached to the wire and brought into operation in like manner, thus releasing the first bar, and so by alternate action the stretching is continued until the wire is taut. The obvious advantage of this arrangement is that it does away with tying of the wire in order to take a new grip.

The King Fly Killer.

Included in the line of wire specialties made by the U. S. Wire Mat Company, Decatur, Ill., is the fly killer here illustrated. It is very simple in its construction and is said to be a most effective device for the extermination

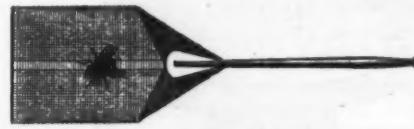


Fig. 1.—The King Fly Killer.

of flies. The wire netting body is securely fastened to an enameled wood handle, and is 1 1/2 in. in length over all by 5 in. wide. The wire paddle is reinforced to give it proper resiliency and prevent it from curling up. It is said to kill without crushing, thus avoiding the soiling of walls and fabrics. Fig. 2 illustrates the simple but

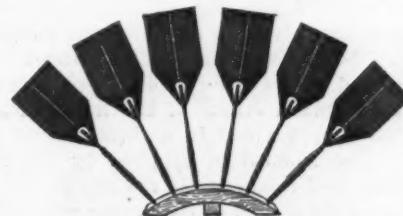


Fig. 2.—Display Stand for Fly Killers.

effective means provided for the display of the killers. The display stand is designed to hold six killers, which come packed two dozen in a carton, one rack being included in each carton. The cartons are packed in crates of 1, 3 and 5 gross each, and weigh respectively 25, 80 and 120 lb.

Square Deal and Flyer Washing Machines.

The latest additions to the line of washing machines, which now includes 15 different styles, made by the H. F. Brammer Mfg. Company, Davenport, Iowa, are the rotary washers shown in the accompanying illustrations. The Square Deal, Fig. 1, the more recent of the company's productions, is described as thoroughly reliable in every respect. Its tub has no bolt holes through the body, and consequently no bolts to catch the clothes or produce spots where leakage is likely to occur. The gearing of this machine is provided with anti-friction ball bearings and a simple but effective mechanism for producing the re-

rigidly supported by cross braces. The machine is finished in the natural color of the wood, while the mechanism is aluminum bronzed. The chief feature of the Square Deal rotary shown in Fig. 2 is found in the unique gearing provided for its propulsion. The dasher is driven by a solid oscillating driving shaft operated by a heavy crank wheel. The gearing, which consists of peg tooth cogs on the vertical shaft, are entirely enclosed in an iron casing, thus guarding against the accidental mashing of a finger that might otherwise occur. The dasher operates on a well galvanized metal paddle and is strongly constructed of Southern hardwood. The tub itself is built and finished in the same manner as the one above described.



Fig. 1.—Square Deal Rotary Washing Machine.



Fig. 2.—Flyer Lever Rotary Washing Machine.

quired reciprocating action of the dasher or stirrer block. It is also supplied with a large well balanced flywheel, which is designed to give five complete revolutions to one forward and backward stroke of the lever, each single stroke imparting approximately a three-quarter turn to the dasher. The momentum supplied by the flywheel secures evenness and regularity of movement, overcoming in a large degree the inertia of the dasher when reversing its action on the clothes. Particular attention is called to the fact that all of the mechanism is attached to the lid, obviating the necessity of bolting any of the parts to the tub. The tub is referred to as being constructed of the best Louisiana red cypress lumber, with staves and bottoms corrugated on the inner side, thus materially increasing the rubbing surface. The lid is of double thickness, and the four extension staves forming the legs are

L. & U. Tennis Racket.

Lee & Underhill, 98 Chambers street, New York, have just put on the market the L. & U. tennis racket, shown in Figs 1 and 2. The feature of the racket, aside from the fine materials and expert workmanship, is in the longitudinal slot about 3-16 in. wide and 5% in. long on each side, affording by the method of cutting 4 in. clear length through the handle in its center. Experience has shown that this form of construction makes the racket particularly fast in serving and on ground strokes, the slight flexibility seeming to add speed to the stroke. The only stroke to which the racket is slower is said to be where it is held stationary, as in blocking or half volleying a low drive at the net. On account of the slight give of the racket in this case the ball does not appear to rebound as sharply as from the regular racket. This, however, is said not to be a disadvantage, as it aids the player in dropping a volley over the net "dead." The racket is made in three distinct shapes and four numbers, Models A, B, C, and D, including the popular elongated oval and the fuller curve commonly used for six or seven years back. As those informed know, ash is the best available wood for the frame, and the denser it is the more life it has, but at the same time the total weight must not exceed a certain prescribed number of ounces. While the slot has been adopted to transfer the effects of strain and shock to the handle, it serves the additional purpose of permitting the use of a heavier grade of stock without exceeding the required limits of weight. The attractive appearance of the racket is increased by the high polish and other decorative features in excellent taste, including a dark leather end with a trade monogram, L. & U., in gilt stamped on it. Model C has a cedar handle and D is fitted with a cane handle. The gut used is of the highest grade obtainable, made from sheep intestines, requiring, it is said, the product of 24 sheep to string one racket.

Two Views of the L. & U. Slotted Handle Tennis Racket.



Keystone Nail Company.

The Keystone Nail Company, which for several years has conducted a plant for galvanizing nails, rivets, &c., in Philadelphia, Pa., removed on May 1 to its new plant at Rochester, Pa., which has been recently completed and fully equipped with its patented machinery. The new plant will have a capacity of 1000 kegs of nails per day, and will be devoted exclusively to producing the Keystone brand galvanized nails. The offices of the company are located in the Keystone Building, Pittsburgh, while

it will be represented in the Philadelphia territory by E. L. Hand & Co., 614 Market street, in that city, where a stock of galvanized nails will be maintained. The company has issued a handy booklet, entitled "Facts You Should Know About Galvanized Nails," referring to their advantages for many purposes and calling especial attention to the features of excellence in its own product. Keystone nails are described as heavily and properly coated, carefully finished and cooled by a process which does not harden them and make them brittle.

Sight Feed Riveter.

To supply the need for a simple, inexpensive and yet effective riveting machine for the use of harness repair shops, as well as manufacturers, the F. H. Smith Mfg. Company, Chicago, is offering the riveter here illustrated. It is of a form that permits the setting of rivets in places that are inaccessible to an automatic machine and derives the name of sight feed from the manner in which the rivet is held. The chuck which holds the rivet in place, it is said, occupies no more room than the ordinary straight plunger and is made to grasp the rivet firmly by the head, leaving the entire length of the rivet exposed to sight until driven in. The chuck is small enough in size to avoid interference with the accurate placing of rivets close to a buckle or other projections in the work. There is naturally more or less variation in the size of rivet heads of the same number and to provide for any reasonable irregularity in this respect allowance is made in the chuck trip, into which the rivet is fed by hand. In the use of tubular or bifurcated rivets the advantage of having the rivet in sight of the operator is obvious and is especially emphasized. To accomplish this result in a light machine of reasonable cost has been the particular aim of the company in the design of this tool. A loop anvil not shown in the illustration is furnished with each machine and interchangeable chucks and anvils for No. 1 and No. 3 rivets are regularly carried in stock. The machine has a depth of gap from center of rivet to rear of throat of 6 in., and an equal opening from top to bottom of gap; width from foot to rear of machine is 12 $\frac{1}{2}$ in., and height from top of lever to bench is 16 in. The extreme distance from bottom of plunger to top of anvil is 1 $\frac{1}{2}$ in., and it will accommodate rivets 3-16 to $\frac{3}{4}$ in. in length, inclusive. All working parts are made of steel, and the weight of machine, complete, with foot power is 26 lb. The machines are furnished complete with foot power and necessary bolts for setting up, and are packed in individual wooden boxes, the shipping weight of which is 35 lb.



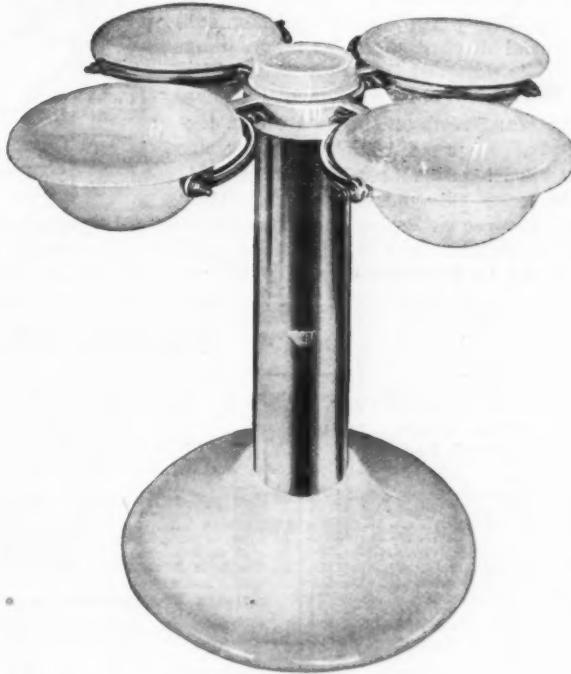
Sight Feed Riveter.

The Standard double acting spring floor hinge here illustrated is made by the Standard Mfg. Company, Shelby Ohio. The hinge is let into the floor, the top coming level with the surface of the floor, with the socket shown let into the bottom of the door and secured with screws through the socket into the door. The socket has two set screws with which the door is brought to perfect alignment after it is hung. Means are provided for giving the spring more or less tension as is required for different doors, a finish plate being provided covering the top plate of the hinge. This can be removed when necessary to adjust the tension of the spring. The hinge can be used where steel beams come near the surface of the floor on account of the slight depth required to be cut into the floor, about 1 $\frac{1}{2}$ in. for ordinary sized doors. All parts are made of steel, and cone, ball race and all wearing parts are hardened to prevent wear and assure long life. The spring is of the compression type, with spring

plunger guided by the spring, which forms a cushion to take up the side motion of the plunger at each swing of the door and makes the hinge, it is explained, practically noiseless in its action. The hold open feature is one of the points to which attention is called. A door hung with a set of the hinges will stay open when swung either way. This hold open feature is positive and is not a strain upon the hinge. The hinges are furnished to the trade in all finishes demanded in builders' hardware.

Portable Revolving Pedestal Lavatory.

The Humphries Mfg. Company, Mansfield, Ohio, has lately brought out a line of porcelain enameled iron specialties, including lavatories, baths, sanitary tables, &c., for hospitals, asylums and institutions of similar character. Herewith is illustrated its portable multiple bowl lavatory. It is of the pedestal type, and is mounted on rollers, permitting its being quickly and easily moved if desired. A white enameled iron base supports a brass nickel plated column, which carries four semispherical



Portable Revolving Pedestal Lavatory.

bowl, arranged to revolve around a central axis. The bowls are hung on nickel plated arms with trunions, which permits, with a slight movement, the instant emptying of the contents. Being mounted on rollers the lavatory can be easily drawn close to the operating table, and such liquids as are required placed in the various bowls, any one of which is instantly available by a slight turning movement. When it is desired to empty the bowl it is turned from the operator, emptied and refilled by the assistant without interfering with the surgeon's work or interrupting him. The fitting, as shown, occupies a space 36 in. square and is 30 in. high. The bowls are 10 $\frac{1}{2}$ in. in diameter at the top and 5 $\frac{1}{2}$ in. deep.

Double Acting Spring Floor Hinge.

The Standard double acting spring floor hinge here illustrated is made by the Standard Mfg. Company, Shelby Ohio. The hinge is let into the floor, the top coming level with the surface of the floor, with the socket shown let into the bottom of the door and secured with screws through the socket into the door. The socket has two set screws with which the door is brought to perfect alignment after it is hung. Means are provided for giving the spring more or less tension as is required for different doors, a finish plate being provided covering the top plate of the hinge. This can be removed when necessary to adjust the tension of the spring. The hinge can be used where steel beams come near the surface of the floor on account of the slight depth required to be cut into the floor, about 1 $\frac{1}{2}$ in. for ordinary sized doors. All parts are made of steel, and cone, ball race and all wearing parts are hardened to prevent wear and assure long life. The spring is of the compression type, with spring

The Suremark Crayon.

The Walter A. Zelincker Supply Company, St. Louis, Mo., is offering a new crayon, which is put on the market as a competitive line. It is shown, reduced in size, in the accompanying illustration. The actual size is 5 in.

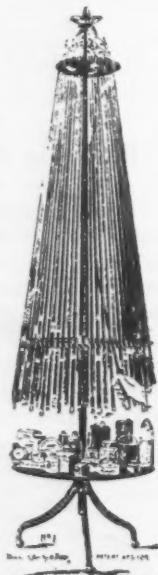


The Suremark Crayon.

long and $\frac{5}{8}$ in. in diameter. It is made in four colors—blue, red, yellow and black—is waterproof and is suitable for all general uses, including marking on leather, paper, glass, china, tin, castings, boxes, sacks, &c.

Portable Revolving Whip Rack.

John H. Best, Galva, Ill., is manufacturing the portable revolving whip rack and display stand, shown in the accompanying illustration. The stand is of iron and steel throughout, the central support being made of wrought pipe in sections. The crown at the top is 14 in. in diameter and contains 144 notches, half of which are on the outside perimeter, and half on the inside circumference and radial arms. Holders are thus provided for 12 dozen whips when placed one in each notch; but by hanging more than one in a notch, as is sometimes done, as many as a gross and a half can be accommodated. The notches are so constructed, it is said, that no injury is done to the whips in placing and removing them. The spreader wheel above the display shelf is 28 in. in diameter and has 72 notches, the latter having a grip form which holds the whips firmly in place. The strong, substantial display shelf, 30 in. in diameter, is designed for trade accessories, which can thus be conveniently shown. The stand rests on three cast iron legs having a spread of 32 in.; they are clamped together upon the center shaft which, by this means, may be raised and lowered as desired, to make the over all dimensions of the stand from 8 ft. to 9 ft. 10 in. high. The stand is finished in dark olive green paint with gilt trimmings.

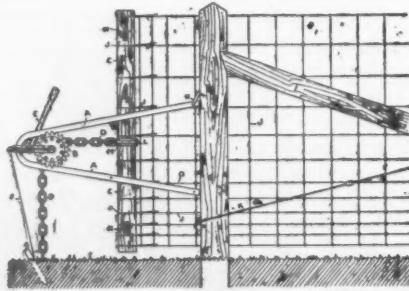


Portable Revolving Whip Rack.

all neatly varnished. The net weight of the stand is 80 lb.; when boxed for shipment, 100 lb.

The Ideal Fence Tool Outfit.

The device herewith illustrated designed for stretching woven wire fence is made by the Abingdon Fence Tool Company, Abingdon, Ill. It is referred to as the improved 1908 double strength fence machine, comprising three separate and distinct appliances, which, working together, make the complete machine. These appliances consist of the Ideal anchoring device, Ideal rotary reversible straining device and the Ideal never slip clamping device, all of which are shown assembled and in working position in the accompanying illustration. The top leg of the bracket A forming the anchor is provided with a drive suspension hook by means of which it is secured to the anchored post. The bracket is further reinforced by



The Ideal Fence Tool Outfit.

a rigid wooden brace, or, as shown, by a flexible wire anchor, attached to the rear end; the former is, however, recommended. The third and most important feature of the device is the never slip clamp, which is composed of two bars held together by two eye bolts. By turning the eyes of these bolts parallel with slotted openings in the washers underneath, the bars are easily separated for adjusting the wire between them. An open ended clevis or hook is attached to the clamping bars near the center of pull, so that when the chain D is connected to the puller B and power applied, the bars will turn half round thereby wrapping the wires of the fence over one bar, making a hitch hold which, it is said, will withstand the severest strains. Extreme simplicity and ease of operation are claimed for the tool, which beside its use in connection with fence building can, it is stated, be successfully applied to the pulling of posts, straightening up old corn cribs, hay sheds, &c., as well as the stretching of barb wire strands above woven wire fence.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils— $\frac{1}{2}$ gal.

Linseed, State and Western, raw, in bbls.	40 @ 42
City, Boiled, in bbls.	43 @ 44
City, Raw, in bbls.	42 @ 43
Raw, Calcutta, in bbls.	70 @ ..
Lard, Prime, Winter.	77 @ 70
Extra No. 1.	55 @ 57
No. 1.	47 @ 52
Cotton-seed, Crude, f.o.b. mill.	34 @ 35
Summer Yellow, prime.	43 1/2 @ 44
Summer White.	46 1/2 @ 46 1/2
Yellow Winter.	46 1/2 @ 46 1/2
Tallow, Acidless.	52 @ 55
Menhaden, Brown, Strained.	40 @ ..
Light Strained.	40 @ ..
Cocoanut, Ceylon.	1/2 lb 64 @ 65
Cochin.	1/2 lb 8 @ 8 1/2
Cod, Domestic, Prime.	42 @ 44
Newfoundland.	44 @ 46
Red, Elaine.	38 @ 40
Saponified.	1/2 lb 54 @ 55
Olive, Yellow.	67 @ 69
Neatsfoot, Prime.	55 @ 58
Palm, Lagos.	1/2 lb 56 @ 58

Mineral Oils—

Black, 29 gravity, 25@30 cold test.	1/2 gal.
29 gravity, 15 cold test.	13 1/2 @ 13 1/2
Summer.	13 1/2 @ 14
Cylinder, light filtered.	12 1/2 @ 13
Dark, filtered.	20 1/2 @ 21
Paraffine, 903-905 sp. gravity.	14 1/2 @ 15
903 sp. gravity.	13 1/2 @ 14
905 sp. gravity.	11 @ 11 1/2
Red.	13 1/2 @ 14

Miscellaneous—

Barytes.	
White, Foreign.	1/2 ton \$18.50 @ 20.50
Amer. floated.	1/2 ton 19.00 @ 20.00
Off color.	1/2 ton 13.00 @ 16.50

Chalk, in bulk.

China Clay, Imported.	1/2 ton 11.50 @ 18.00
Cobalt, Oxide.	1/2 ton 1.45 @ 2.60
Whiting, Commercial.	1/2 ton 1.42 @ ..
Gilders.	1/2 ton 1.52 @ ..
Ex. Gilders.	1/2 ton 1.60 @ ..

Putty, Commercial— $\frac{1}{2}$ 100 lb.

In bladders.

In bladders.	1/2 ton 1.85
In bladders, or tube.	1/2 ton 1.45
In 1 lb. to 5 lb. cans.	2.65 @ 2.95
In 12 1/2 to 50 lb. cans.	1.50 @ 1.90

In machine bladders.

1/2 ton 1.85

Glue—

Cabinet.

1/2 ton 1.15

Common Bone.

1/2 ton 1.15

Extra White.

1/2 ton 1.15

Fish, Liquid, 30 gal. bbls., per gal.

1/2 ton 1.20

Foot Stock, White.

1/2 ton 1.15

Foot Stock, Brown.

1/2 ton 1.15

German Common Hide.

1/2 ton 1.15

German Hide.

1/2 ton 1.15

French.

1/2 ton 1.15

Irish.

1/2 ton 1.15

Low Grade.

1/2 ton 1.15

Medium White.

1/2 ton 1.15

1/

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33 1/2 @ 33 1/2 & 10% signifies

that the price of the goods in question ranges from 33 1/2 per cent. discount to 33 1/2 and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also **THE IRON AGE DIRECTORY**, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a **DIRECTORY** of the Iron, Hardware and Machinery trades.

Standard Lists.—“The Iron Age Standard Hardware Lists” contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—

Columbian and Domestic.....33 1/2%
North's.....10%
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent.....35%
Taplin's Perfection.....35%

Ammunition—See Caps, Cartridges, Shells, &c.

Anti-Rattlers—

Fernald Mfg. Co., Burton Anti-Rattlers, $\frac{1}{2}$ doz. pairs, Nos. 1, \$0.75; 2, \$0.60; 4, \$1.00; 5, \$0.50; Fernald Quick Shifter, $\frac{1}{2}$ doz. pairs.....\$2.00@\$3.00

Anvils—American—

Eagle Anvils.....3 lb @ 84%
Hay-Budden, Wrought.....94%@\$9%
Trenton.....3 lb @ 9%@\$9%

Imported—

Swedish Solid Steel Saco, Superior, 3 lb. @ 10%
Peter Wright & Sons, 3 lb, \$1 to 39 lb; 35 to 600 lb, 11%.

Anvil, Vice and Drill—

Millers Falls Co., \$18.00.....15&10%

Apple Parers—See Parers, Apple, &c.

Aprons, Blacksmiths'—

Livingston Nail Co.....10%

Augers and Bits—

Com. Double Spur.....75d@80%
Jennings' Patn., Bright.....65@60%
Black Lip or Blued.....65@65%
Boring Mach. Augers.....70%
Car Bits, 12-in. twist.....40d@10%
Ford's Auger and Car Bits.....40&5%
Ft. Washington Auger Co., Con-
ard's.....35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list.....25&7/4%
No. 30, R. Jennings' list.....50%
Russell Jennings'.....25&2/4%
L. Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....50%
Snell's Bell Hanger Bits.....50%
Snell's Car Bits, 12-in. twist.....50%
Snell's King Auger Bits.....50%
Wright's Jennings Bits.....50%
Bait Stock Drills—
See Drills, Twist.

Expansive Bits—

Clark's Pattern, No. 1, 3 lb doz, \$26;
No. 2, \$18.....60&10%
Ford's, Clark's Pattern.....65&5%
C. E. Jennings & Co., Steer's Pat. 25%
Lavigne Pat, small size, \$18.00; large
size, \$26.00.....60&10%
Swan's.....60%

Gimlet Bits—

Per gro.
Common Dbl. Cut.....\$3.00@\$3.25
German Pattern, Nos. 1 to 10,
\$4.75; 11 to 13, \$5.75

Hollow Augers—

Bonney Pat, per doz.....\$5.50@\$6.00
Ames.....25&10%
Universal.....20%

Ship Augers and Bits—

Ship Augers.....40d@10%
Ford's.....35&5%
C. E. Jennings & Co.:
L. Hommedieu's.....6%
Watrous'.....35%&7/4%
Snell's.....45%

Awl Hafes—See Handles, Mechanics' Tool.

Awls—

Brad Awls:
Handled.....gro. \$2.75@\$3.00
Unhandled, Shaded.....gro. 63@66%

Unhandled, Patent.....gro. 66@70%

Peg Awls:
Unhandled, Patent.....gro. 31@34%
Unhandled, Shaded.....gro. 65@70%

Scratch Awls:
Handled, Com. gro. \$3.50@\$4.00
Handled, Socket gro. \$11.50@\$12.00

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

Single Bit, base weights: Per doz.
First Quality.....\$1.75@5.00
Second Quality.....\$1.25@4.50
Double Bit, base weights:
First Quality.....\$1.70@7.50
Second Quality.....\$1.50@6.75

Axle Grease—

See Grease, Axle.

Axes—

Iron or Steel.
Concord, Loose Collar.....44@5%
Concord, Solid Collar.....44@5%
No. 1 Common, Loose.....37@4%
No. 1 $\frac{1}{2}$ Common, New Style.....44@5%
No. 2 Solid Collar.....44@5%
Half Patent:
Nos. 7, 8, 11 and 12.....65@65&10%
Nos. 13 to 14.....65@65&10%
Nos. 15 to 18.....70@70&10%
Nos. 19 to 22.....70@70&10%

Boxes, Axles—

Common and Concord, not
turned.....lb., 50@6%
Common and Concord, turned.....lb., 60@7%
Half Patent.....lb., 90@10%

Belt—

Fishing—

Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....30&5%

Balances—

Sash—

Caldwell new list.....50&10%
Pullman.....50&10%

Spring—

Spring Balances.....50d@60%
Chatillon's:
Light Spg. Balances.....50@50&10%
Straight Balances.....40@40&10%
Circular Balances.....50@10%
Large Dial.....30%

Barb Wire—See Wire, Barb.

Bars—

Crow—

Steel Crowbars, 10 to 40 lb.....
per lb, 2 $\frac{1}{2}$ @2 $\frac{1}{2}$

Towel—

No. 10 Ideal, Nickel Plate.....\$0.50
Embossed.....55%

Beam, Scale—

Scale Beams.....40%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered 3 lb doz, \$0.80;
Tinned.....\$0.85
No. 11 Wire Coppered 3 lb doz, \$1.15;
Tinned.....\$1.20
No. 10 Wire Tinned.....\$0.70, \$1.50

Beaters Egg—

Holt-Lyon Co.:
Holt, per doz, No. 5, Jap'd, \$0.80;
No. A, Jap'd, \$1.15; No. B, Jap'd,
\$1.85; No. 6, Jap'd, \$1.65;
Lyons' Jap'd, per doz, No. 2,
\$1.35.

Taplin Mfg. Co.:
Improved Dover, per gro., No. 60,
\$6.00; No. 75, \$6.50; No. 100, \$7.00;
No. 102, \$7.50; No. 125, \$8.00;
Hotel, \$15.00; No. 152, Hotel
Tin'd, \$17.00; No. 200, Tumbler;
\$9.50; No. 202, Tumbler Tin'd,
\$9.50; No. 300, Mammoth, per
doz, \$25.00.

Turner & Seymour Mfg. Co.:
T. & S. Dover.....\$6.50

Bellows—

Blacksmith, Standard List:
Split Leather.....60d@65%
Grain Leather.....50@50&10%

Hand—

Inch.....6 7 8 9 10

Doz.....500 5.50 6.00 6.50 7.50

Molders—

Inch.....10 12 14 16

Doz.....\$7.50 9.00 12.00 15.00

Bells—

Cow—

Ordinary Goods.....75d@75d@10d@5%

High grade.....70d@10d@75%

Jersey.....75d@10d@75%

Texas Star.....50%

Door—

Home, R. & E. Mfg. Co.'s.....55&10%

Hand—

Polished, Brass.....50d@10d@60%

White Metal.....50d@10d@50d@5%

Nickel Plated.....50d@5%

Swiss.....50d@5%

Cone's Globe Hand Bells.....50d@5%

Miscellaneous—

Farm Bells.....lb., 2 $\frac{1}{2}$ @2 $\frac{1}{2}$

Church and School.....60@60&5%

Belt—

Leather—

Standard.....70d@10d@70d@5%

Light.....75d@10%

Cut Leather Lacing.....50d@10d@60%

Leather Lacing Sides, per sq. ft.....21@22%

Rubber—

Competition (Low Grade),

70d@10d@75d@5%

Standard.....60@60d@10%

Best Grades.....33 1/2 @ 40d@10%

Bench Stops—

See Stops, Bench

Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters.....20%

Bench Stops—

See Stops, Bench

Boards, Stove, Tire—

Green River Tire Benders and Upsetters.....20%

Bicycle Goods—

John S. Leng's Son & Co.'s 1907 list:

Chain, Parts, Spokes.....50%

Tubes.....60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See Augers and Bits.

Blocks, Tackle—

Common Wooden.....75@75d@5%

B. & L. B. Co.:

Boston Wood Snatch, 50%; Eclipse

Steel, 75%; Hollow Steel, 50&10%;

Star Wire Rope, 50%; Tarbo

Metal Snatch, 50%; Tarbo New

Steel, 50&10%; Wire Rope

Snatch, 50%;

Lane's Patent Automatic Lock and

Junior.....30%

See also Machines, Hoisting.

Boards, Stove—

Paper and Wood Lined.....55%

Embossed.....55%

Boards, Wash—

See Washboards.

Bobs, Plumb—

Keufl & Esser Co.....33 1/2%

Bolts—

Carriage, Machine, &c.—

Common Carriage (cut thread):

$\frac{3}{8}$ x 6 and smaller.....75d@5%

Larger and longer.....70d@5%

Star, Eagle, \$3.00 list.....80d@5%

Bolt Ends.....70d@5%

Brackets—

Wrought Steel.....70d@10d@75d@10%

Bradley Metal Clasp.....80d@10d@80d@10%

Griffin's Pressed Steel.....75d@5d@10%

Griffin's Folding Brackets.....70d@10%

Taplin's Victor Handy Egg Beater

Bracket.....\$0.10 doz, \$1.50

Bright Wire Goods—

See Wire and Wire Goods.

Brollers—

Kilbourne Mfg. Co.....75d@20%

Wire Goods Co.....75d@20%

Buckets, Galvanized—

Mfr's list, price per gross.

Quart.....10 12 14

Water, Reg. 25.35 28.00 32.00

Water, Hvy. 45.35 48.00 52.00

Fire, Rd. Btm. 32.00 34.65 38.65

Well 37.35 41.35 45.35

Bull Rings—See Rings, Bull.

Butts—

Brass—

Wrought, High List, Oct. 26, '06 55%

Cast Brass, Tiebout's.....40%

Cast Iron—

Fast Joint, Broad.....40d@10d@50%

Fast Joint, Narrow.....40d@10d@50%

Loose Joint.....70d@10d@75%

Loose Pin.....70d@10d@75%

Mayer's Hinges.....70d@10d@5%

Parliament Butts.....70d@10d@5%

Wrought Steel—

Bright—

Light Narrow, Light Re-

versible 70d@5%

Reversible and Broad, 70d@5%

Loose Joint, Narrow, Light

Inside Blind, &c. 70d@5%

Back Flaps, Table Chest. 65%

Japaned, Light Narrow, Loose Pin.

Light Narrow, Ball Tip. 60d@5%

Broad 40d@5%

Steeple Tipped 40d@5%

Ball Tipped 70d@5%

Light Narrow, Loose Pin.

Light Narrow, Ball Tip. 60d@5%

Broad 40d

Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900, 30%
Hendryx Bronze: Series 700, 800, 30%
Hendryx Enamelled, 35%

Calipers—See Compasses.**Calks, Toe and Heel—**

Blunt, 1 prong, per lb., 4½@4½¢
Sharp, 1 prong, per lb., 4½@5½¢
Burke's, Blunt, 4½¢; Sharp, 4½@5½¢
Lautier, Blunt, 4½@4½¢; Sharp, 4½@4½¢
Perkins', Blunt, 3 lb., 3½¢; Sharp, 4½¢
Perkins', Blunt, 3 lb., 3½¢; Sharp, 4½¢

Can Openers—See *Openers, Can.***Caps, Percussion—**

Eley's E. B. 52@55¢
G. D. per M 3½@35¢
F. L. per M 40@42¢
G. E. per M 48@50¢
Musket per M 62@63¢

Primers—

Berdan Primers, 82 per M., 2½@5%
Primer Shells and Bullets, 15@10%
All other primers per M., \$1.52@1.60

Carpet Stretchers—See *Stretchers, Carpet.***Cartridges—**

Blank Cartridges:
32 C. F., \$5.50 10@5%
33 C. F., \$7.00 10@5%
22 cal. Rim, \$1.50 10@5%
32 cal. Rim, \$2.75 10@5%
B. Caps, Con. Ball, Swgd, \$1.90
B. B. Caps, Round Ball \$1.49
Central Fire 25%
Target and Sporting Rifle, 15@5%
Primed Shells and Bullets, 15@10%
Rim Fire, Sporting 50%
Rim Fire, Military 15@5%

Casters—

Bed 65@10%
Plate 60@5%
Philadelphia 70@10%
Acme, Ball Bearing 35¢
Gem (Roller Bearing) 70@10@10@5%
Steel Gem 20%
Standard Ball Bearing 45%
Yale (Double Wheel) low list 40@10%

Cattle Leaders—See *Leaders, Cattle.***Chain, Proof Coil—**

American Coll, Straight Link:
3½-16 1½-5½ 3½-7½ 1½-5½
\$1.15 1.15 4.60 3.95 3.75 3.65 3.55
½-7½-1 ½ to 1½ inch.
\$3.45 3.55

In cask lots, deduct 25¢.

German Coll. 60@60@5%
German Pattern Coil:
6-9 to 1 70@5@70@10%
2 and 3 60@10@6@10@10@10@5%
4, 5 and 6 50@10@50@10@5%

Halter—

Halter Chains 60@60@5%
German Pattern Halter Chains,
list July 24, '97 60@10@5%
Covert Mfg. Co.:
Halter 35@5%

Cow Ties—See *Halters and Ties.***Trace, Wagon, &c.—**

Traces, Western Standard: 100 pr.
6½-6-3, Straight, with ring, \$28.00
6½-6-2, Straight, with ring, \$29.00
6½-8-2, Straight, with ring, \$32.00
6½-10-2, Straight, with ring, \$37.00
NOTE.—Add 2¢ per pair for Hooks
Twist Traces: add per pair for Nos. 2
and 3, 2¢; No. 1, 3¢; No. 4, 4¢ to price of
Straight Link.

Eastern Standard Traces, Wag-
on Chain, &c., 60@10@60@10@5%
Miscellaneous—

Jack Chain, list July 10, '93:
Iron 60@10@7½%
Brass 65%
Safety and Plumbers' Chain, 75¢
Gal. Pump Chain 1b., 4½@5%
Bridgeport Chain Co.:
Triumph Halter and Coll, 35@2½@40%
Triumph Dog 50@10@60%
Brown Halter and Coll 45@50@5%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stal-
lion 40%

Oreid Community:
American Halter, Dog and Kennel
Chains 35@2½@40%
Niagara Dog Leads and Kennel
Chains 45@50@5%
Wire Goods Co.:
Wire Chain 70%
Universal Dbl. Jointed Chain 50%

Chain and Ribbon, Sash—

Oscoda Community:
Steel Chain 60%
Bronze Chain, 6%; Steel Chain,
Coppered 60@10%
Sash Chain Attachments, per set, 8¢
Aluminoy Sash Ribbon, per 100
ft., \$2.00@50¢
Sash Ribbon Attachments, per set, 8¢

Chalk—(From Jobbers.)

Carpenters' Blue gro., 50@55¢
Carpenters' Red gro., 45@50¢
Carpenters' White gro., 40@15¢
Checks, Door—

Bardsley's 45%
Pul'man, per 100 \$54.00
Russwin 33½%

Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools 50%
Youth's Chests, with Tools 35%
Gentlemen's Chests, with Tools 25%
Farmers, Carpenters, etc., Chests,
with Tools 20%
Machinists' and Pipe Fitters'
Chests, Empty 45%
Tool Cabinets 45%
C. E. Jennings & Co.'s Machines'
Tool Chests 7½%

Cheisels—

Socket Framing and Firmer
Standard List 80@10@ 30%

Buck Bros. 30%

C. E. Jennings & Co.:

Socket Firmer No. 10 25@7½%

Socket Framing No. 15 25@7½%

Swan's 66@7½

L. & I. J. White & Co. 30@30@5%

Tanged—

Tanged Firmer 30@5@63½%
Buck Bros. 30%

Cold—

1b.
Cold Chisels, good quality, 13@15¢
Cold Chisels, fair quality, 11@12¢
Cold Chisels, ordinary 9@10¢

Chucks—

Almond Drill Chucks 35%
Almond Turret Six-Tool Chuck 40%
Beach Pat, each \$8.00 38@5%

Empire 25%
Blacksmiths' 25%
Jacobs' Drill Chucks 35%
Pratt's Positive Drive 25%
Skinner Patent Chucks: Independent Lathe Chucks 35%
Universal, Reversible Jaws 35%
Combination, Reversible Jaws 35%
Drill Chucks, New Model, 25%
Standard, 45%; Skinner Pat. 25%
Positive Drive 40%
Planer Chucks 20%
Face Plate Jaws 35%
Standard Tool Co.: Improved Drill Chuck 45%
Union Mfg. Co.: Combination Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21 35%
Scroll Combinations, Nos. 83 and 84 35%
Greated Scroll, Nos. 33-34 and 35-36 35%
Independent Iron, Nos. 18 and 19 35%
Independent No. 64 25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104 35%
Union Czay Drill 25%
Universal No. 12, 16, 17, 18, 19, 20 40%
Face Plate Jaws, Nos. 28, 30, 48 and 50 35%
Steel Face Plate Jaws, Nos. 70 and 72 30%
Westcott Patent Chucks: Lathe Chucks 50%
Little Giant Auxiliary Drill 50%
Little Giant Double Grip Drill 50%
Little Giant Drill, Improved 50%
Oneida Drill 50%
Serial Combination Lathe 50%
National Drill 25%
Clamps—

Adjustable Hammers 20@20@5%
Carriage Makers, P. S. & W. Co.:
Bedsy Parallel 35@40%
Myers' Hay Rack 45%
Lineman's Swedish Neverturn 65%
Wood Workers' Hammers 40@10%
Saw Clamps, see Vises, Saw Fliers.

Cleaners, Drain,

Iwan's Champion, Adjustable 50%
Iwan's Champion, Stationary 40%

Sidewalk—

Star Socket, All Steel \$1.05 net
Shank, All Steel \$3.24 net
W. & C. Shank, All Steel \$1.05 net

7½ in., \$3.00; 8 in., \$3.25.

Cleavers, Butchers'

Foster Bros. 30%
Fayette R. Plum. 30%
L. & I. J. White Co. 30%

Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.: 1902 Chicago Horse, each, \$10.75

20th Century Horse, each, \$5.00

Lightning Belt Horse, each, \$15.00

Chicago Belt Horse, each, \$20.00

Stewart's Enclosed Gear Horse, each \$6.75

Stewart's Patent Sheep Shearing Machine, each \$12.75

Stewart's Enclosed Gear Shearing Machine, No. 8, each, \$9.75

Clips, Axle—

Regular Styles, list July 1, '05.
8½@8½@10%
Cloth and Netting, wire—

—See Wire, &c.

Cocks, Brass—

Hardware list: Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling: dc 75%
Compression Bibbs 70%

Coffee Mills—

See Mills, Coffee.

Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list 40%
Leather, Walter B. Stevens & Son's list 40%
Carpenters' White gro., 40@15¢

Checks, Door—

Bardsley's 45%
Pul'man, per 100 \$54.00
Russwin 33½%

Chain and Ribbon, Sash—

Oscoda Community:
Steel Chain 60%
Bronze Chain, 6%; Steel Chain,
Coppered 60@10%
Sash Chain Attachments, per set, 8¢
Aluminoy Sash Ribbon, per 100
ft., \$2.00@50¢
Sash Ribbon Attachments, per set, 8¢

Chalk—(From Jobbers.)

Carpenters' Blue gro., 50@55¢
Carpenters' Red gro., 45@50¢
Carpenters' White gro., 40@15¢

Checks, Door—

Wm. Schollhorn Co.: Excelsior Dividers 69%
Lodi Dividers 70@10%

Checks, Door—

Wm. Schollhorn Co.: Excelsior Dividers 69%
Lodi Dividers 70@10%

Compasses, Dividers, &c.

Ordinary Goods 70@10@75%
Wm. Schollhorn Co.: Excelsior Dividers 69%
Lodi Dividers 70@10@

Checks, Door—

Wm. Schollhorn Co.: Excelsior Dividers 69%
Lodi Dividers 70@10@

Conductor Pipe—

L. C. L. to Dealers: Gal. Steel. Charcoal.

Northeastern 70@10% 50@10@67½%
Eastern 75% 50@10@67½%
Pittsburgh 75@10@65% 60%
Central 75@10% 60%
Northwestern 75@7½% 60%
Western 70@12½% 50@12½%
Tennessee 70@10% 50@12½%
Southern 70% 50@12½%
Southwestern 70% 50@5%
Terms, 60 days: 2½ cash 10 days. Factory shipments generally delivered. See also Eave Troughs.

Coclers, Water—

L. & G. Mfg. Co.: Gal. 2 3 4 6 8

Galvanized, \$1.85 \$2.00 \$2.25 \$2.90 \$3.90

Galvanized, Lined handles, 6 1½ 2 3 4 8

Each \$1.95 \$2.15 \$2.40 \$3.30 \$4.15

White Enamelled 10% 10%
Agate Lined 10% 10%

Coppers' Tools—

See Tools, Coopers'.

Coppers, Soldering—

Soldering Coppers, 3 lb. to pair and heavier, 22@25%; lighter than 3 lb. to pair 2½@27½%

Cord—

Gal. 1b. 35¢

Braided, Drab lb. 35¢

Braided, White, Com., Nos. 8 to 12, 2½ in., \$1.25

to 12, 2½ in., \$1.25; Nos. 6, 12½ in., \$2.25

22½ in. In lots of 12 doz. or over, 1 cent less per pound.

Cable Laid Italian, lb., No. 18, 37¢

Italian, lb., A, No. 18, 25¢; B, 22¢

Common India lb., 11@12½ in., \$18@20¢

Cotton Sash Cord, Twisted, 18@20¢

Patent Russia lb., 20¢

Cable Laid Russia lb., 21¢

India Hemp, Br'd lb., 21¢

India Hemp, Twisted lb., 19@14¢

Patent India, Twisted lb., 17¢

Pearl Braided, cotton, \$6. 12½ in., \$27½¢; Nos. 8 to 12, 26¢

Edgestone Braided, Nos. 8 to 12, 26¢; 12½ in., \$27½¢

Hempone Cable Laid Italian, Nos. 7 to 10, 23¢

Pullman: Wire Sash Cord 10%
Sash Cord Attachments, per 100, \$2.00

Sash, Nos. 8 to 12; 12½ in., \$2.00

Braided, \$1. Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 50¢; Spot Cord, 50¢; 50¢; 50¢; 50¢

Massachusetts White lb. 40¢

Massachusetts Drab lb. 45¢

Phoenix White, Nos. 8 to 12, 27¢

Silver Lake, per lb.: A. Drab, 45¢; B. Drab, 46¢; B. White, 46¢; Italian Hemp, 40¢; Linen, 50¢; See also Chain and Ribbon.

Wire, Picture—

Full Length 90@—%

Short Length 90@20@—%

Hendryx Standard Wire Picture Cord, old list, 85@10%
Turner & Stanton Co. Wire Picture Cord 85@10%

Cradles—

Grain 40@12½%

Crayons—

White Round Crayons, Cases, 100 gro., \$6.50@7.50 at factory, but lower prices made by jobbers.

Zelnicke's Lumber: \$1. gro. 100%
White and Purple, Indelible \$7.50

Blue, Red, Green, Yellow and Terra Cotta, \$6.50; Black \$4.50

Giant Lumber, 5½ in. x 15-16 in. round, all colors, \$12.00; Indelibles, \$14.00; Blacks \$10.00

Genuine Soapstone, Metal Workers', 5 in. x 2½ in. Round, \$2.50; 5 in. x 3 in. x 3½ in., \$1.75; 5 x 2½ in. x 3½ in., \$2.50; 5 x 3½ in. x 3½ in., \$2.50; 5 x 3½ in. x 3½ in., \$2.50; Suremark, Black, \$2.25; Blue, Red and Yellow \$2.50

Crooks, Sheppers'—

Fort Madison, per doz., Heavy, \$5.50; Light \$5.00

Crow Bars—

See Bars, Crow.

Cultivators—

Victor Garden 50%

Cutlery, Table—

International Silver Company: No. 12 M'dm' Knives, 18½ in., \$1.50

Star, Eagle, Rogers & Hamilton and Anchor \$1.50

Wm. Rogers & Son \$1.50</

Handled—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1904, or selling at net prices.

Cronk's Weeding, No. 1, \$2.00; No. 2, \$2.50
Star Double Bit, 32¢
F. T. Madison Cotton Hoe, 70¢ & 10¢
F. T. Madison Crescent Cultivator Hoe, 70¢ & 10¢
Ft. Madison Mattock Hoes:
Regular Weight, 30¢ doz. 45¢
Junior Size, 30¢ doz. 54¢
Ft. Madison Sprouting Hoe, 30¢ doz. 60¢ & 10¢
Ft. Madison Dixie Tobacco Hoe, 75¢ doz. 87¢
Kretzinger's Cut Easy, 70¢ & 10¢
Warren Hoe, 45¢ & 10¢
W. & C. Ivanhoe, 75¢ & 10¢
B. B. 6 in. Cultivator Hoe, 34¢
B. B. 6½ in., 35¢
Acme Wedding, 30¢ doz. net, 44¢
W. & C. L'nting Shovel Hoe, 30¢ doz. 45¢

Hoisting Apparatus—See **Machines, Hoisting.****Holders—Bit—**

Angular, 30¢ doz. 45¢ & 10¢
Door
Bardley's, Iron, 40%; Brass and Bronze, 25%; Empire, 50%; Pullman, 25%; Richards Mfg. Co.: No. 117, Ever-ready, 40%; No. 118, 119, Sure Grip, 50%; Superior, 33½%

File and Tool—

Nicholson File Holders and File Handles, 33½¢ & 40¢

Fruit Jar—

Triumph Fruit Jar Holder, 30¢ gross, \$10.00; 30¢ doz. 31¢ 25

Trace and Rein—

Fernald Double Trace Holder, 30¢ doz. pairs, 31¢ 25

Dash Rein Holder, 30¢ doz. pairs, 31¢ 25

Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German, 33½%

Hooks—Cast Iron—Bird Cage, Reading, 40¢
Clothes Line, Reading List, 45¢ & 20¢
Coat and Hat, Reading, 45¢ & 20¢
Coat and Hat, Wrightsville, 60¢ & 55¢
Harness, Reading List, 40¢**Wire—**Belt, 80¢
Wire C. & H. Hooks, 80¢
Bradley Metal Clasp Wire, Coat and Hat, 70¢ & 10¢; Ceiling, 70¢ & 10¢
Columbian Hdw. Co., Gem, 70¢ & 10¢
Parker Wire Goods Co., King, 70¢ & 10¢
Wire Goods Co.: Acme, 60¢ & 10¢; Chief, 70%; Crown, 75%; Czar, 65%; V. Brace, 75%; Czar Harness, 50¢ & 10¢.**Wrought Iron—**Boz, 6 in., per doz., \$1.00; 8 in., \$1.25; 10 in., \$1.50.
Cotton, 30¢ doz. 31.05¢ & 31.25
Wrought Staples, Hooks, &c.—
See Wrought Goods.**Miscellaneous—**Hooks, Bench, see **Stops, Bench.**
Bush, Light, 30¢, 45¢, 20¢, Medium, 36.75¢; Heavy, 37.65¢
Grass, best, all sizes, per doz. 43.00
Grass, common grades, all sizes, per doz. 31.50

Whiffletrees, 30¢ & 6¢

Hooks and Eyes:Brass, 60¢ & 10¢
Mailable Iron, 70¢ & 76¢ 10¢
Cove, Mfg. Co., Gate and Buttice Hooks, 40¢
Ft. Madison Cut-Easy Corn Hooks, 30¢ net

Turner & Stanton Co., Cup and Shoulder, 30¢ & 10¢

Bench Hooks—See **Bench Stops.**
Corn Hooks—See **Knives, Corn.****Horse Nails—**See **Nails, Horse.****Horseshoes—**See **Shoes, Horses.****Hose, Rubber—**

Garden Hose, ½-inch:

Competition, 50¢ ft.

3-ply Guaranteed, 80¢ ft.

4-ply Guaranteed, 10¢ & 11¢

Cotton Garden, ¾-in. coupled:

Low Grade, 80¢ ft.

Fair Quality, 10¢ ft.

Irons—Sad—

From 4 to 10. 30¢ & 34¢

B. B. Sad Irons, 34¢ & 37¢

Mrs. Potts, cents per set:

Nos. 50 55 60 65

Jap'd Tops, 83 88 93 91

Tin'd Tops, 88 85 98 95

New England Preasing, 16.5¢ & 14¢

Bar and Corner—

Richards Mfg. Co., Bar, 60¢ & 10¢;

Corner, 60¢ & 10¢

Pinking—

Pinking Irons, 30¢ & 34¢

Irons, SolderingSee **Coppers.****Jacks, Wagon—**

Covert Mfg. Co.:

Auto Srew, 30¢ & 25%; Steel, 65¢

Lockport, 50¢

Lane's Steel, 30¢ & 25¢

Richards' Tiger Steel, No. 130, 50¢ & 10¢

Smith & Hemenway Co.'s, 35¢

Ladder—

Richards Mfg. Co., Ladder Jacks, 50¢

Kettles—Brass, Spun, Plain, 20¢ & 25¢
Enamelled and Cast Iron—See **Ware, Hollow.****Knives—**Butcher, Kitchen, &c.—
Foster Bros.' Butcher, &c., 30¢

Wilkinson Shear & Cutlery Co., 60¢

Corn—Columbian Cutlery Co., Wilcut Brand Knives and Hooks, 60¢
Withington Acme, 30¢ doz. 32.65¢
Dent, 32.75¢; Adj. Serrated, 32.20¢
Serrated, 32.10¢; Yankee No. 1, 31.50¢
Yankee No. 2, 31.15¢**Drawing—**Standard List, 80¢ & 10¢
C. E. Jennings & Co., Nos. 45, 46, 25¢ & 7½¢

Jennings & Griffin, Nos. 41, 42, 65¢ & 7½¢

Swan's, 66¢ & 7½¢
Watrous, 16¢
L. & J. White, 20¢ & 25¢**Hay and Straw—**

Serrated Edge, per doz. 55.50¢ & 57.75¢

Iwan's Sickle Edge, 30¢ doz. 49.50¢

Iwan's Serrated, 30¢ doz. 51.00¢

Miscellaneous—Farricor', 30¢ doz. 32.60 & 33.55¢
Westermolin's, 30¢ doz. 33.00 & 33.25¢**Knobs—**

Base, 2½-inch, Birch, or Maple, Rubber Tip, 30¢ & 34.25¢

Carriage, Jap., all sizes, 30¢ & 34.45¢

Door, Mineral, 30¢ doz. 65¢ & 70¢

Door, Por. Jap'd, 30¢ doz. 70¢ & 75¢

Door, Por. Nickel, 30¢ doz. 82.05 & 82.15¢

Bardley's Wood Door, Shutters, &c., 15¢

Lacing, Leather—See **Belting, Leather.****Ladders, Store, &c.—**Allith Mfg. Co., Reliable, 50¢
Lane's Store, 25¢Myers' Noiseless Store Ladders, 50¢
Richards Mfg. Co.: Improved Noiseless, No. 112, 50¢
Climax Shelf, No. 113, 50¢
Trolley, No. 109, 50¢**Ladies, Melting—**L. & G. Mfg. Co. (low list), 20¢
P. S. & W., 40¢ & 10¢
Reading, 60¢**Lanterns—Tubular—**

Regular, No. 0, 30¢, 35.50¢ & 45.50¢

Side Lift, No. 0, 30¢, 35.00¢ & 44.75¢

Hinge Globe, No. 0, 30¢, 36.00¢ & 44.75¢

Other Styles, 40¢ & 40¢ & 10¢

Bull's Eye Police—

3-inch, 34.25¢ & 45.50¢

Latches—Thumb—

Roggine's Latches, with screw, 30¢, 35.00¢ & 45.00¢

Door—

Allith Mfg. Co., Reliable and Alligator, 50%; Reliable Cold Storage, 50%; Crouk & Carrier Mfg. Co., No. 101, 50¢

Parker's Columbia and Victoria, 33½¢

Parker's Box and Side, 50¢ & 10¢

Swift, Lane Bros. Co., 30¢

Leaders, Cattle—

Small, 30¢ doz. 50¢; large, 60¢

Covert Mfg. Co.: Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20¢

Leathers, Pump—See **Pumps.****Lifters, Transom—**

R. & E. Mfg. Co., 10¢

Lines—

Wire Clothes, Nos. 18, 20, 22, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 210, 220, 230, 240, 250, 260, 270, 280, 290, 300, 310, 320, 330, 340, 350, 360, 370, 380, 390, 400, 410, 420, 430, 440, 450, 460, 470, 480, 490, 500, 510, 520, 530, 540, 550, 560, 570, 580, 590, 600, 610, 620, 630, 640, 650, 660, 670, 680, 690, 700, 710, 720, 730, 740, 750, 760, 770, 780, 790, 800, 810, 820, 830, 840, 850, 860, 870, 880, 890, 900, 910, 920, 930, 940, 950, 960, 970, 980, 990, 1000, 1010, 1020, 1030, 1040, 1050, 1060, 1070, 1080, 1090, 1100, 1110, 1120, 1130, 1140, 1150, 1160, 1170, 1180, 1190, 1200, 1210, 1220, 1230, 1240, 1250, 1260, 1270, 1280, 1290, 1300, 1310, 1320, 1330, 1340, 1350, 1360, 1370, 1380, 1390, 1400, 1410, 1420, 1430, 1440, 1450, 1460, 1470, 1480, 1490, 1500, 1510, 1520, 1530, 1540, 1550, 1560, 1570, 1580, 1590, 1600, 1610, 1620, 1630, 1640, 1650, 1660, 1670, 1680, 1690, 1700, 1710, 1720, 1730, 1740, 1750, 1760, 1770, 1780, 1790, 1800, 1810, 1820, 1830, 1840, 1850, 1860, 1870, 1880, 1890, 1900, 1910, 1920, 1930, 1940, 1950, 1960, 1970, 1980, 1990, 2000, 2010, 2020, 2030, 2040, 2050, 2060, 2070, 2080, 2090, 2100, 2110, 2120, 2130, 2140, 2150, 2160, 2170, 2180, 2190, 2200, 2210, 2220, 2230, 2240, 2250, 2260, 2270, 2280, 2290, 2300, 2310, 2320, 2330, 2340, 2350, 2360, 2370, 2380, 2390, 2400, 2410, 2420, 2430, 2440, 2450, 2460, 2470, 2480, 2490, 2500, 2510, 2520, 2530, 2540, 2550, 2560, 2570, 2580, 2590, 2600, 2610, 2620, 2630, 2640, 2650, 2660, 2670, 2680, 2690, 2700, 2710, 2720, 2730, 2740, 2750, 2760, 2770, 2780, 2790, 2800, 2810, 2820, 2830, 2840, 2850, 2860, 2870, 2880, 2890, 2900, 2910, 2920, 2930, 2940, 2950, 2960, 2970, 2980, 2990, 3000, 3010, 3020, 3030, 3040, 3050, 3060, 3070, 3080, 3090, 3100, 3110, 3120, 3130, 3140, 3150, 3160, 3170, 3180, 3190, 3200, 3210, 3220, 3230, 3240, 3250, 3260, 3270, 3280, 3290, 3300, 3310, 3320, 3330, 3340, 3350, 3360, 3370, 3380, 3390, 3400, 3410, 3420, 3430, 3440, 3450, 3460, 3470, 3480, 3490, 3500, 3510, 3520, 3530, 3540, 3550, 3560, 3570, 3580, 3590, 3600, 3610, 3620, 3630, 3640, 3650, 3660, 3670, 3680, 3690, 3700, 3710, 3720, 3730, 3740, 3750, 3760, 3770, 3780, 3790, 3800, 3810, 3820, 3830, 3840, 3850, 3860, 3870, 3880, 3890, 3900, 3910, 3920, 3930, 3940, 3950, 3960, 3970, 3980, 3990, 4000, 4010, 4020, 4030, 4040, 4050, 4060, 4070, 4080, 4090, 4100, 4110, 4120, 4130, 4140, 4150, 4160, 4170, 4180, 4190, 4200, 4210, 4220, 4230, 4240, 4250, 4260, 4270, 4280, 4290, 4300, 4310, 4320, 4330, 4340, 4350, 4360, 4370, 4380, 4390, 4400, 4410, 4420, 4430, 4440, 4450, 4460, 4470, 4480, 4490, 4500, 4510, 4520, 4530, 4540, 4550, 4560, 4570, 4580, 4590, 4600, 4610, 4620, 4630, 4640, 4650, 4660, 4670, 4680, 4690, 4700, 4710, 4720, 4730, 4740, 4750, 4760, 4770, 4780, 4790, 4800, 4810, 4820, 4830, 4840, 4850, 4860, 4870, 4880, 4890, 4900, 4910, 4920, 4930, 4940, 4950, 4960, 4970, 4980, 4990, 5000, 5010, 5020, 5030, 5040, 5050, 5060, 5070, 5080, 5090, 5100, 5110, 5120, 5130, 5140, 5150, 5160, 5170, 5180, 5190, 5200, 5210, 5220, 5230, 5240, 5250, 5260, 5270, 5280, 5290, 5300, 5310, 5320, 5330, 5340, 5350, 5360, 5370, 5380, 5390, 5400, 5410, 5420, 5430, 5440, 5450, 5460, 5470, 5480, 5490, 5500, 5510, 5520, 5530, 5540, 5550, 5560, 5570, 5580, 5590, 5600, 5610, 5620, 5630, 5640, 5650, 5660, 5670, 5680, 5690, 5700, 5710, 5720, 5730, 5740, 5750, 5760, 5770, 5780, 5790, 5800, 5810, 5820, 5830, 5840, 5850, 5860, 5870, 5880, 5890, 5900, 5910, 5920, 5930, 5940, 5950, 5960, 5970, 5980, 5990, 6000, 6010, 6020, 6030, 6040, 6050, 6060, 6070, 6080, 6090, 6100, 6110, 6120, 6130, 6140, 6150, 6160, 6170, 6180, 6190, 6200, 6210, 6220, 6230, 6240, 6250, 6260, 6270, 6280, 6290, 6300, 6310, 6320, 6330, 6340, 6350, 6360, 6370, 6380, 6390, 6400, 6410, 6420, 6430, 6440, 6450, 6460, 6470, 6480, 6490, 6500, 6510, 6520, 6530, 6540, 6550, 6560, 6570, 6580, 6590, 6600, 6610, 6620, 6630, 6640, 6650, 6660, 6670, 6680, 6690, 6700, 6710, 6720, 6730, 6740, 6750, 6760, 6770, 6780, 6790, 6800, 6810, 6820, 6830, 6840, 6850, 6860, 6870, 6880, 6890, 6900, 6910, 6920, 6930, 6940, 6950, 6960, 6970, 6980, 6990, 7000, 7010, 7020, 7030, 7040, 7050, 7060, 7070, 7080, 7090, 7100, 7110, 7120, 7130, 7140, 7150, 7160, 7170, 7180, 7190, 7200, 7210, 7220, 7230, 7240, 7250, 7260, 7270, 7280, 7290, 7300, 7310

Pinking Irons—See *Irons, Pinking*.**Pins, Escutcheon—**Brass 50@50¢10%
Iron, list Nov. 11, '05 60@60¢10%**Pipe, Cast Iron Soil—**Standard 2-6 in. 60@50¢@—%
Extra Heavy, 2-6 in. 70@65@—%
Fittings, Standard and Heavy, 70@60@75%**Pipe, Merchant—***Consumers, Carloads.**Steel. Iron.**Blk. Galv. Blk. Galv.*

	%	%	%	%
1/8 & 1/4 in.	48	62	..	..
1/4 in.	65	52	64	50
1/2 in.	68	56	66	54
5/8 to 6 in.	72	62	70	60
7 to 12 in.	69	54	67	52

Pipe, Vitrified Sewer—*Carload lots.*Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:
First-class 87%
Second-class 90%**Pipe, Stov—**

	Per 100 joints.	O. L. L.	C. L.
Edwards' Nested:			
5 in. Standard Blue	\$4.25	42	25
6 in. Standard Blue	6.75	7.75	
7 in. Standard Blue	7.75	8.75	
5 in. Royal Blue	7.00	8.00	
6 in. Royal Blue	7.50	8.50	
7 in. Royal Blue	8.50	9.50	
Wheeling Corrugating Co.'s Nested:			
5 in. Uniform Color	36.15	37.15	
6 in. Uniform Color	6.65	7.65	
7 in. Uniform Color	7.65	8.65	

Planes and Plane Irons—**Wood Planes—**

	Per 100 joints.	O. L. L.	C. L.
Bench, first qual.	30@30¢10%		
Bench, second qual.	40@40¢10%		
Molding	25@25¢10%		
Chapin-Stephens Co.:			
Bench, First Quality	30%		
Bench, Second Quality	30%		
Molding and Miscellaneous	25%		
Toy and German	30%		
Union	60%		

Iron Planes -

	Per 100 joints.	O. L. L.	C. L.
Chaplin's Iron Planes	50@10%		
Union	60%		

Plane Irons—

	Per 100 joints.	O. L. L.	C. L.
Wood Bench Plane Irons, list Dec. 12, '06	25%		
Buck Bros.	30%		
Chapin-Stephens Co.	25%		
Union	30%		
L. & I. J. White	25@25¢10%		

Planters, Corn, Hand—

	Per 100 joints.	O. L. L.	C. L.
Kohler's Eclipse	20@10¢		
Plates—			

	Per 100 joints.	O. L. L.	C. L.
Feltie	10.4@41¢		

Pliers and Nippers -

	Per 100 joints.	O. L. L.	C. L.
Button Pliers	75@50@105%		
Gas Burner, per doz.	5 in. \$1.25		
Gas Pipe	12.00 32.25 32.75 33.50		
Acme Nippers	50@5%		
Cronk & Carrier Mfg. Co.:			
American Button	80%		
Improved Button	75@10%		
Cronk's	60%		
No. 80 Linemen's	50%		
Stub's Pattern	45%		
Combination and others	33%		
Heller's Farriers' Nippers	50%		
Pincers and Tools	40@40@10@1045%		
F. S. & W. Timmers' Cutting Nippers	10%		
Wm. Schollhorn Co.:			
Bernard, 35%; Elm City, 35%; Paragon, 50%; Lodi, 55%.			
Swedish Side, End and Diagonal Cutting Pliers	50%		
Utica Drop Forge & Tool Co.:			
Pliers and Nippers, all kinds	40%		

Plumbs and Levels—

	Per 100 joints.	O. L. L.	C. L.
Chapin-Stephens Co.:			
Plumbs and Levels	30@30@10%		
Chapin's Imp. Brass Co.	40@40@10%		
Pocket Levels	30@30@10%		
Extension Sights	30@30@10%		
Machinists' Levels	40@40@10%		
Douston's Plumbs and Levels	60@10%		
Douston's Pocket Levels	60@10%		
Stanley's Duplex	35%		
Woods' Extension	33@%		

Points, Glaziers'—

	Per 100 joints.	O. L. L.	C. L.
Bulk and 1-lb. papers	10. 9		
1/4-lb. papers	10. 91/4		

Police Goods—

	Manufacturers' Lists	O. L. L.	C. L.
Tower's	25@23@5%		

Polish—Metal, Etc—

	Per doz.	O. L. L.	C. L.
Prestoline Liquid, No. 1 (1/2 pt.)	\$3.00	No. 2 (1 qt.)	\$6.00 40%
Prestoline Paste	25¢		

George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, \$1 doz. 50¢; 1/2 pt. gr. \$4.50;
1/2 lb. boxes, \$1 doz. 42.25.
U. S. Liquid, 8 oz. cans, \$1 doz. 31.25.
Barkeeps' Friend Metal Polish, \$1 doz. 31.75.

Stove—
Black Eagle Benzine Paste, 5 lb cans, \$1 doz. 10¢
Black Eagle, Liquid, 1/2 pt. cans, \$1 doz. 75¢
Black Jack Paste, 5 lb cans, \$1 gr. 50¢
Black Kid Paste, 5 lb cans, each 30.65
Ladd's Black Beauty Liquid, per 100 tins, \$1.75
Joseph Dixon's, \$1 gr. 55.75.....10%
Dixon's Plumabago, \$1 doz. 10¢
Fireside \$1 gr. \$2.50
Gem, \$1 gr. \$1.50.....10%
Japanese \$1 gr. \$3.50.....10%
Jet Black \$1 gr. \$3.50.....10%
Peerless Iron Enamel, 10 oz. cans, \$1 doz. 15.00

Poppers, Corn—
1 qt. Square, per doz. \$0.80; gro. \$8.75
1 qt. Round, per doz. \$0.90; gro. \$10.00
1/2 qt. Square, per doz. \$1.00; gro. \$11.00
1/2 qt. Square, per doz. \$1.25; gro. \$13.50

Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

Posts, Steel—
Steel Fence Posts, each, 5 ft. 12¢;
6 ft. 16¢; 6 1/2 ft. 48¢.

Potato Parers—
See *Parers, Potato*.

Pots, Glue—
Enamelled 35@10%
Tinned 30@10%

Powder—
In Canisters:

Duck, 1 lb. each 45¢
Fine Sporting, 1 lb. each 75¢
Rifle, 1/2 lb. each 18¢
Rifle, 1 lb. each 25¢

In Keys:

12½ lb. kegs \$3.50
25 lb. kegs \$4.50

King's Semi-Smokeless:

Keg (25 lb bulk) \$6.50
Half Keg (12½ lb bulk) \$3.50
Quarter Keg (6½ lb bulk) \$1.90
Case 24 (1 lb cans bulk) \$8.50
Half case (1 lb cans bulk) \$4.50

King's Smokeless: Shot Gun, Rifle, Keg (25 lb bulk) \$16.00
Half Keg (12½ lb bulk) \$6.25
Quarter Keg (6½ lb bulk) 3.25
Case 24 (1 lb cans bulk) 14.00
Half case 12 (1 lb cans bulk) 7.25

King's Smokeless: Shot Gun, Rifle, Keg (25 lb bulk) \$16.00
Half Keg (12½ lb bulk) \$6.25
Quarter Keg (6½ lb bulk) 3.25
Case 24 (1 lb cans bulk) 14.00
Half case 12 (1 lb cans bulk) 7.25

Presses—

Fruit and Jelly—
Enterprise Mfg. Co. 20@25%

Seal Presses—
Morrill's No. 1, \$1 doz. 20.00.....50%

Pruning Hooks and Shears—
See *Shears*.

Pullers, Nail—

Cyclops 50%

Miller's Falls, No. 3, \$1 doz. 32.00.....50%
Morrill's No. 1, Nail Puller, \$1 doz. 20.00.....50%

Pearson No. 1, Cyclone Spike Puller, each \$30.00.....50%

The Scranton Co. Case Lots:

No. 28 (large) \$5.50

No. 3B (small) \$5.00

Staple Pullers, Utica and Davison

Diamond 70%
Giant 50%
Staple Pullers, Utica and Davison

Mixed 60%
McKinney's: Hinged Hanger Track, \$1 ft. 11¢

1 x 3-16 Track 55@7½¢

Myers Stayton Track 60@5%

Richards' Mfg. Co.:

Common, 1 x 3-16 in. 13¢; 1 x 3-16, \$3.25; 1 x 3-16, \$3.50.

Special Hinged Hanger Rail 60@10%

Lag Screw Rail, No. 65 50@5%

Gauge Trolley Track, \$1 ft. No. 31, 9¢; No. 32, 11¢; No. 33, 20¢.

No. 50 60@10%
No. 61 63@10%
No. 62 63.25@10%
No. 63 63@10%
No. 64 64@10%
No. 65 65@10%
No. 66 66@10%
No. 67 67@10%
No. 68 68@10%
No. 69 69@10%
No. 70 70@10%
No. 71 71@10%
No. 72 72@10%
No. 73 73@10%
No. 74 74@10%
No. 75 75@10%
No. 76 76@10%
No. 77 77@10%
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No. 142 142@10%
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No. 144 144@10%
No. 145 145@10%
No. 146 146@10%
No. 147 147@10%
No. 148 148@10%
No. 149 149@10%
No. 150 150@10%
No. 151 151@1

Saws—

Atkins':	45%
Circular	45%
Band	50@50&10%
Butcher Saws	50
Cross Cut	35
One-Man Cross Cut	40
Narrow Cross Cut	50
Harp, Rip and Panel	35@5
Miter Box and Compass	40
Mulay, Mill and Drag	45
Wood Saws	40&10%
Chapin-Stephens Co.:	
Turning Saws and Frames	30@30&10%
Diamond Saw and Stamping Works:	
Sterling Kitchen Saws	30@10&10%
Douston's:	
Circular, Solid and Ins'ted Tooth	50
Band, 2 to 18 in. wide	60
Band, 1/4 to 1%	60
Crosscuts	45
Narrow Crosscuts	50
Mulay, Mill and Drag	50
Framed Woodsaws	25
Wood saws	25
Wood saw rods, Tinned	15
Hand Saws, Nos. 12, 20, 9, 16, 1100	15
Lb. 120, 76, 77, 8	25
Hand Saws, Nos. 7, 10, 15@1/2, 3, 1	25
0, 00, Combination	25
Compass, Key Hole, &c.	25
Butcher Saws and Blades	30
C. E. Jennings & Co.:	
Back Saws	15@10%
Butcher Saws	25@12%
Compass and Key Hole Saws	35@6@12%
Framed Wood Saws	25@6@12%
Hand Saws	12@10%
Wood Saw Blades	35@6@12%
Butcher Saws	15@10%
Star Saw Blades	15@10%
Massachusetts Saw Works:	
Victor Kitchen Saws	40@10&50%
Butcher Saws, Blades	35@40%
Peace & Richardson's Hand Saws	30
Simonds':	
Circular Saws	45%
Crescent Ground Cross Cut Saws	30
One-Man Cross Cuts	40@10%
Gang Mill, Mulay and Drag Saws	45
Hand Saws	50
Black Saws	25@5@12%
Butcher Saws	35@5@12%
Hand Saws	25@5@12%
Hand Saws, Bay State Brand	45
Compass, Key Hole, &c.	25@5@12%
Wood Saws	40@7@10%
Wheeler, Madden & Clemens Mfg. Co.'s Cross Cut Saws	40%

Hack Saw Blades and Frames—

Atkins' Hack Saw Blades & A. A. B. Z.	
Douston's:	
Concave Blades	25%
Keystone Blades	25%
Hack Saws, Frames	25%
Simonds' Mfg. Co.:	30%
C. E. Jennings & Co.:	
Hack Saw Frames, Nos. 175, 180, complete	40@12%
Hack Saws, Nos. 175, 180, complete	40@12%
Goodell's Hack Saw Blades	40@10%
Grinnell's Hack Saw Frames	35@5@12%
Grimm's Hack Saw Blades	35@5@12%
Star Hack Saws and Blades	15@10%
Sterling Hack Saw Blades	30@10@5%
Sterling Hack Saw Frames	30@10@10%
Sterling Power Hack Saw Machines, each, No. 1, \$2.00; No. 2, \$3.00, 10@%	20
Victor Hack Saw Blades	20
Victor Hack Saw Frames	40%
Whitaker Mfg. Co.:	
National Hand Blades	40%
National Hand Frames	30@5
National Power Blades	30@10%
Scroll—	
Barnes, No. 1, \$15	25%
Barnes' Scroll Saw Blades	40@10%
Barnes' Velocipede Power Scroll Saw, without boring attachment	40@10%
with boring attachment	40@10%
Lester, complete, \$10.00	15@10%
Rogers, complete, \$3.50 and \$4.00	40@10%

Scales—

Family, Turnbull's	50@50&10%
Courter:	
Hatch, Platform, 1/2 oz. to 4 lbs.	doz., \$5.50
Two Platforms, 1/2 oz. to 8 lbs.	doz., \$16.00
Union Platform, Plain	\$1.70@1.90
Union Platform, Stpd	\$1.85@2.15
Chatillon's:	
Eureka	25%
Favorite	40%
Crocer's Trip Scales	50%
The Standard Portables	40%
The Standard R. R. and Wagons	50@10%

Scrapers—

Box, 1 Handle	doz. \$2.00@2.25
Box, 2 Handle	doz. \$3.50@3.80
Ship, Light, \$2.00; Heavy, \$4.50	
Chapin-Stephens Co. Box	30@30@10%
Richards Mfg. Co. Foot	50@10%

Screws—Bench and Hand

Bench, Iron, doz. 1 in.	\$2.50@2.75; 1 1/2, \$3.00@3.25; 1 1/4, \$3.50@3.75
Bench, Wood	20@20@10%
Hand, Wood	70@10@70@10@10%
Chapin-Stephens Co. Hand	70@70@10@24%
Coach, Lag and Hand Rail	
Lag, Cone Point	80@5@80@6@10%
Coach, Gimlet Point	80@80@5%
Hand Rail	70@10@75%
Jack Screws—	
Standard List	70@10@75%
Millers Falls	50@10@10%
Swett Iron Works	70@75%

Machine—

Cut Thread, Iron, Brass or Bronze:	
Flat Head or Round Head	50@50@10%
Fillister Head	50@10@10%

Rolled Thread, F. H. or R. H., Iron	75@10%
F. H. or R. H., Brass, Nos. 8 to 11	65@10%

Set and Cap—

Set (Iron)	75@10@75@10%
Set (Steel), net advance over Iron	25%
Sq. Hd. Cap	70@10@75@10%
Hex. Hd. Cap	70@10@75@10%
Rd. Hd. Cap	50@6@10@10%
Fillister Hd. Cap	60@7@10@10%

Wood—

List July 23, 1903.	
Flat Head, Iron	87@4@50@
Round Head, Iron	85@5@50@
Flat Head, Brass	80@5@50@
Round Head, Brass	77@4@50@
Flat Head, Bronze	75@5@50@
Round Head, Bronze	72@4@50@
Drive Screws	87@4@50@

Scroll Saws—**See Saws, Scroll.****Scythes—** Per doz.

Grass, No. 1, Plain	\$7.50@7.50
Clipper, Bronzed Webb	7.25@7.75
No. 3 Clipper, Pol'd Webb	7.50@8.00
No. 6 Clipper and Solid Steel	7.75@8.25
Bush, Weed and Bramble, Nos. 11, 12 and 13	7.25@7.75
Grain, No. 1	9.00@9.50
Bronzed Webb, No. 1	8.25@9.75
Nos. 3 and 4 Clipper, Grain	9.50@10.00
Solid Steel, No. 6	\$10.00@10.50

Seeders, Raisin—**Enterprise** Per doz. 26@30%**Sets— Awl and Tool—**

Fray's Adj. Tool Handles, Nos. 1, 12	\$1.10
2 1/2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 5510, 5511, 5512, 5513, 5514, 5515, 5516, 5517, 5518, 5519, 5520, 5521, 5522, 5523, 5524, 5525, 5526, 5527, 5528, 5529, 55210, 55211, 55212, 55213, 55214, 55215, 55216, 55217, 55218, 55219, 55220, 55221, 55222, 55223, 55224, 55225, 55226, 55227, 55228, 55229, 552210, 552211, 552212, 552213, 552214, 552215, 552216, 552217, 552218, 552219, 552220, 552221, 552222, 552223, 552224, 552225, 552226, 552227, 552228, 552229, 5522210, 5522211, 5522212, 5522213, 5522214, 5522215, 5522216, 5522217, 5522218, 5522219, 5522220, 5522221, 5522222, 5522223, 5522224, 5522225, 5522226, 5522227, 5522228, 5522229, 55222210, 55222211, 55222212, 55222213, 55222214, 55222215, 55222216, 55222217, 55222218, 55222219, 55222220, 55222221, 55222222, 55222223, 55222224, 55222225, 55222226, 55222227, 55222228, 55222229, 552222210, 552222211, 552222212, 552222213, 552222214, 552222215, 552222216, 552222217, 552222218, 552222219, 552222220, 552222221, 552222222, 552222223, 552222224, 552222225, 552222226, 552222227, 552222228,	

Scythe Stones—

Pike Mfg. Co., 1901 list:	
Black Diamond S. S. 3/4 gro.	\$12.00
Lamoille S. S. 3/4 gro.	\$11.00
White Mountain S. S. 3/4 gro.	\$9.50
Green Mountain S. S. 3/4 gro.	\$7.00
Extra Indian Pond S. S. 3/4 gro.	\$8.00
No. 1 Indian Pond S. S. 3/4 gro.	\$7.50
No. 2 Indian Pond S. S. 3/4 gro.	\$5.00
Leader Red End S. S. 3/4 gro.	\$5.00
Quick Cut Enemy 3/4 gro.	\$10.00
Pure Corundum 3/4 gro.	\$18.00
(representative)	\$7.00
Emery Scythe Rifles, 2 Coat.	\$8.80
Emery Scythe Rifles, 3 Coat.	\$11.00
Emery Scythe Rifles, 4 Coat.	\$13.20
Balance of 1901 list 33 1/2%	
Lectro (Artificial), 3/4 gro.	\$12.00
Lightning (Artificial), 3/4 gro.	\$18.00
(representative)	33 1/2%

Stoppers, Bottle—

Victor Bottle Stoppers.	3/4 gro. \$9.00
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Stops—Bench—

Millers Falls.	15&10%
Morrill's, 3/4 doz. No. 1.	\$10.00
Morrill's, No. 2.	\$12.50

Door—

Chapin-Stephens Co.	50&50&10%
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Plane—

Chapin-Stephens Co.	30%
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Straps—Box—

Acme Embossed, case lots.	20&10&10%
Cary's Universal, case lots.	20&10&10%

Stretchers, Carpet—

Cast Iron, Steel Points.	.55¢
All Steel Socket.	.50¢

Excelsior Stretcher and Tack Hammer Combined.	16.00
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Stuffers, Sausage—

Enterprise Mfg. Co.	50¢
National Specialty Co., list Jan. 1, 1902.	30&5%

P. S. & W. Co.	40&10&5%
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Sweepers, Carpet—

Bissell Carpet Sweeper Co.	3/4 doz.
Superba, Crotch Mahogany.	\$6.00

Triumph, Fancy Veneers.	\$3.00
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Parlor Queen, Fig. Rosewood.	\$30.00
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Elite, Hungarian Ash.	\$29.00
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Am. Queen, Fig. Mahogany.	\$27.00
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Ideal, Bird's-Eye Maple.	\$25.00
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Grand Rapids, Nickel.	\$24.00
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Japan.	\$22.00
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Standard, Nickel.	\$22.00
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Crown Jewel, Nickel.	\$21.00
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Crystal, Glass Top.	\$36.00
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Grand, 17 in. wide.	\$36.00
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Parlor Grand.	\$48.00
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Club, 21 in. wide.	\$54.00
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Hall, 23 in. wide.	\$60.00
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NOTE.—Rebates: 50¢ per dozen on three dozen lots; \$1 per dozen on five dozen lots; \$2 per dozen on ten dozen lots; \$2.50 per dozen on twenty-five dozen lots.	
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Tacks, Finishing Nails, &c.	
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American Carpet Tacks.	90&40%
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American Cut Tacks.	90&40%
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Swedes' Upholsterers'.	90&40%
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Gimp Tacks.	90&40%
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Lace Tacks.	90&40%
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Trimmers' Tacks.	90&40%
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Looking Glass Tacks.	65%
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Bill Posters' and Railroad Tacks.	90&50&10%
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Hungarian Nails.	80&20%
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Finishing Nails.	70%
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Trunk and Clout Nails.	80&40%
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NOTE.—The above prices are for straight weights.	
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Miscellaneous—	
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Double Pointed Tacks.	90&6 tens@-%
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See also Nails, Wire.	
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Tanks, Oil and Gasoline—	
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Wilson & Friend Co.: Gal.	Gasoline
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30.	\$2.75
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60.	\$3.50
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110.	\$5.00
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Wienbusch & Hilger: Chesterman's Metallic.	No. 34L, etc.
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Metallic.	30&30%
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35&5%: Pocket.	35&35%
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Lufkin's: Ass's Skin.	40&10&50%
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Favorite, Ass Skin.	40&10&50%
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Favorite, Duck and Leather.	25&5&10%
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Metallic.	30&30%
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Patent Bend, Leather.	25&10&10%
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Pocket.	40&40&5%
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Steel.	33 1/2%@35%
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Teeth, Harrow—	
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Steel Harrow Teeth, plain or headed, 5/8-in. and larger.	per 100 lbs. \$2.75@35¢
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Thermometers—	
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Tin Case, Cabinet, Flange, Dairy, &c.	30¢@33 1/2%
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Ties, Bale—Steel Wire—	
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Single Loop.	82¢@610%
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Monitor, Cross Head, &c.	70¢@2 1/2%
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Tinners' Shears, &c.—	
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CURRENT METAL PRICES.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from store—

Refined Iron:

1 to 1½ in. round and square.....	per lb 2.00¢
1½ to 4 in. x ½ to 1 in.....	per lb 2.20¢
1½ to 2½ in. x 3-16 in. and thicker.....	per lb 2.40¢
Rods—½ and 1½ round and square.....	per lb 2.50¢
Angles:	cts per lb
3 in. x 1½ in. and larger.....	2.40¢
3 in. x 3-16 in. and ½ in.....	2.65¢
1½ to 2½ in. x 1½ in.....	2.45¢
1½ to 2½ in. x 3-16 in. and thicker.....	2.60¢
1 to 1½ in. x 3-16 in.....	2.45¢
1 to 1½ in. x ½ in.....	2.50¢
½ x ½ in.....	2.65¢
½ x ½ in.....	2.75¢
½ x ½ in.....	3.80¢
½ x 3-16 in.....	4.00¢
Tees:	per lb
1 in.....	2.75¢
1½ in.....	2.55¢
1½ to 2½ in.....	2.45¢
3 in. and larger.....	2.50¢
Beams.....	2.40¢
Channels, 3 in. and larger.....	2.40¢
Bands—1½ to 6 x 3-16 to No. 8.....	2.45¢
"Burden" Iron, base price.....	3.15¢
Burden's "H. B. & S." Iron, base price.....	2.95¢
"Ulster".....	3.20¢
Norway Bars.....	3.50¢

Merchant Steel from Store—

per lb
Bessemer Machinery.....
Toe Calk, Tire and Sleigh Shoe.....
Best Cast Steel, base price in small lots.....

Sheets from Store—

Elack	per lb
One Pass, C.R. R. G.	
Soft Steel. Cleamed.	
No. 14.....	per lb 2.85..... 2.90¢
No. 18 to 21.....	per lb 2.95..... 3.10¢
No. 21.....	per lb 3.15..... 3.40¢
No. 28.....	per lb 3.30..... 3.50¢

Russia, Planished, &c.

Gen. Russia, according to assort- ment, W. Deweesswood.....	per lb 11¢ @14¢
Patent Planished.....	per lb A, 10¢; B, 9¢, net.

Galvanized.

Nos. 14 to 16.....	per lb 2.15¢
Nos. 22 to 24.....	per lb 3.55¢
No. 27.....	per lb 4.00¢
No. 28.....	per lb 4.25¢

No. 20 and lighter 36 inches wide, 25¢ higher.

Tin Plates—

American Charcoal Plates (per box.)	
"A.A.A." Charcoal:	
IC, 14 x 20.....	per lb 8.40
IX, 14 x 20.....	7.65

A. Charcoal:	
IC, 14 x 20.....	per lb 8.45
IX, 14 x 20.....	7.65

American Coke Plates—Bessemer-

IC, 14 x 20.....	107 lb
IX, 14 x 20.....	5.45

American Terne Plates—

IC, 20 x 28 with a 1 lb. coating.....	per lb 8.00
IX, 20 x 28 with an 8 lb. coating.....	40.00

Seamless Brass Tubes—

List December 4, 1905. Base price 18¢

Brass Tubes, Iron Pipe Sizes—

List December 4, 1905. Base price 18¢

Copper Tubes—

List December 4, 1905. Base price 21¢

Brazed Brass Tubes—

List June 6, 1898. 30¢ per lb

High Brass Rods—

14½¢ per lb

Roll and Sheet Brass—

List June 6, 1898. 14½¢ per lb

METALS—

Tin—

Straits Pig..... per lb 34 @35¢

Copper—

Lake Ingots..... per lb 14 @14¢

Electrolytic..... per lb 14 @14¢

Casting..... per lb 13½ @13½¢

Sheet Copper Hot Rolled, 16 oz..... per lb 17@18¢

" " 14 " " 14@15¢

Sheet Copper Cold Rolled, 1¢ per lb advance over Hot

Rolled.

Sheet Copper Polished 20 in. wide and under, 1¢ ad-

vance over Cold Rolled.

Sheet Copper Polished over 20 in. wide, 2¢ ad-

vance over Cold Rolled.

Bottoms, Pits and Flats..... per lb 2½ basis

Planished Copper, 1¢ per lb more than Polished.

Spelter—

Western..... per lb 5½@6¢

Zinc.

No. 9, base, casks, per lb 7.50¢; Open..... per lb 8.00¢

Lead.

American Pig..... per lb 5 @5½¢

Bar..... per lb 6 @6½¢

Solder.

14 & ½, guaranteed..... per lb 21½ @22½¢

No. 1..... per lb 19½ @20½¢

Refined..... per lb 17½ @18½¢

Prices of Solder indicated by private brand vary ac-

cording to composition.

Antimony—

Cookson..... per lb ..@11¢

Hallets..... ..@11¢

Other Brands..... ..@10¢

Aluminum—

No. 1 Aluminum (guaranteed over 99% pure), in ingot
for remelting. Small lots..... per lb 100-10.5¢

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